THE FARMERS' REGISTER.

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EDMUND RUFFIN, EDITOR AND PROPRIETOR.

NEW PRACTICES. CLOVER AFTER CORN. CLEARING LAND BY BELTING.

By the Editor.

The rotation of crops now practised on Bonaccord, (in Prince George county,) the farm of Mr. James B. Cocke, and which has been in use for several years, is novel and peculiar. It is, 1st year, wheat, (on clover fallow,) 2d, corn, 3d and 4th, clover. The clover seed is sown in December, January or February, on the corn ground of the previous season, and without any preparatory or succeeding process to aid the covering of the seeds. Care only is used to sow when the earth freezes at night and thaws in the day, which changes alone serve, as Mr. Cocke thinks, to set the seeds enough in the earth. He thinks that he is as sure of a good "stand" and growth of clover in this way, as in the usual manner, after wheat. As the practice is new, and I had formerly made a large experiment of clover sowing on the last year's corn land without success, I was the more interested and inquisitive about the results here. My trial was induced by the desire to make the same change of the order of the rotation that Mr. Cocke has effected; that is, to have the wheat crop precede, instead of succeeding the corn. But in my trial, the growth of natural grasses was ahead of the clover, and rendered the attempt to raise the *latter* abortive. There is no question, from what I saw, that Mr. Cocke has succeeded in his practice, to a degree which I had supposed (from my single large trial) to be hopeless, in general. But still there must be some loss of seed, from want of suitable preparation, or of plants afterwards smothered by the annual weeds which cover the land the summer after the corn crop. In one field, which had been in corn in 1838, and sown in clover the winter after, a part was followed by wheat, and sown in clover also at the same time and in the same manner as all the other land which had been in corn only. The whole field has now a very good and well-set crop of clover; but the part which was sown on wheat is obviously thicker, and more free from weeds than the adjoining parts which had been in corn only. This field, however, it should be observed, is of land cleared within the last eight years, and therefore not yet infested with perennial, or biennial root weeds, or grasses, which would more oppose this mode of growing clover than mere annuals, although standing thickly, and six feet high, as are most of the stalks of hog-weed which generally cover this field. On other old and long-cleared fields of the farm, where the seed had been sown in the same way, upon corn land, the stand of clover is not so good as on the newer land.

If, by any means, clover could be successfully made to succeed corn, for the purpose of preceding wheat, it would be a most valuable improvement, on even the best of our existing rotations. And I had formerly aimed to secure that end, not only by the trial, above referred to, of winter or spring sowing, but also among the growing corn, in June, and of which some of the partial success, and more general failures, were reported in a previous volume of this journal. Root grasses, (especially wire-grass,) and summer insects, are the great obstacles to this summer sowing. But when the clover is not obstructed by the first, and is able to withstand the last, the crop has complete possession of the ground, and is in perfection in the next succeeding year, instead of a year later, as it would be delayed if sown the spring after, whether on wheat, or on the corn land without wheat, as on Mr. Cocke's plan.

It is very certain that the cover of the growth of wheat is not needed to *protect* the young clover sown on the same land, as was the former general opinion. On the contrary, this cover serves to keep back and to enfeeble the early growth of the clover very materially. According to the general practice in this part of the country, corn is cut up in October, and put in "shocks," or stacks, on the field where it grew, for the purpose of sowing wheat on the same. Either there is no wheat sown on the spots thus covered by the stacks, or the plants perish if the cornstalks are not removed very early in winter. After being removed as usual, and these spots left bare, the sowing of clover seed soon after covers all the field alike; and at wheat harvest, it will be seen that the clover sown on these naked spots is very far superior in growth and vigor to that of all the remainder of the field, under the cover of the crop of wheat. But then the spots were clear of all other vegetation, when the clover seed was sown.

Among the many curious and remarkable facts in regard to *natural* successions of plants, it is well worthy of observation that, when wheat follows corn, as is usual in this part of the country, the almost exclusive natural growth which follows the wheat, and soon covers the land, is of carrot weed. But if wheat is not sown after the corn, as general a growth of hog-weed follows instead. Thus, in the one case, the young clover of the first year is overshadowed by one of those large and luxuriant annuals, and in the other case by the other; and yet neither of them is to be found, in any quantity, the year after.

A new practice, or rather the late resumption of an old and universally abandoned practice, in my old neighborhood, is the bringing of wood-land into cultivation, by killing the trees by "belting," instead of cutting down and removing or burning up the whole. I first renewed this long abandoned and very slovenly operation, on Coggins Point farm; and of this labor (or neglect) the decaying monuments, in dead and naked trunks, still remain on, and serve to deform, a large proportion of the newest land. As I had all the discredit, and bore the ridicule and reproach, of recommencing this old slovenly mode of clearing of the first settlers, I may be permitted to claim some credit, on the ground of the present extension and general approval of the practice. It is only to be commended, or even excused, where the value of the trees standing on the wood-land (whether for sale, or for farm uses,) would not pay for their entire

removal; and it is only in connexion with marling, that this, or any other mode of bringing poor wood-land into cultivation, is advisable, or will return any profit.

The benefits of this practice are most striking in regard to lands formerly cultivated and exhausted, and afterwards left to be covered by a second growth of pines, of say 30 or more years old, and from six to twelve inches in diameter. There is plenty of such land in every part of lower Virginia; and as long as the heretofore and still usual exhausting system of tillage is pursued, (without marling,) there is no likelihood of there not being a still increasing succession of such secondary growths. The proprietors, as a matter of course, would cut down and clear such land. The wood ("old-field pine") was worthless for any purpose, and was burned on the ground, with much difficulty. The thick cover of pine leaves, the dropping of several previous years, being known to be hurtful to the growth of crops, was carefully raked up and burnt, to get rid of it. No one thought of using this litter as manure for other ground. The land, thus effectually cleaned, was then cultivated in corn; and after two or three years of better production, it was reduced to its former state of exhaustion.

Such was the former mode in Prince George of bringing "pine old fields" into cultivation; and such is still the practice in many places where marling has not yet been introduced. The opposite mode, as practised by myself, and which is either fully or partially conformed to now by all persons similarly situated, was, to marl the land first, (merely opening narrow passages for the carts to drop the loads,) spread the marl carefully and equally on the litter; next cut down all pines under 6 or 8 inches through, and belt all above that size, by merely cutting through the bark effectually. Any other and smaller growth than pines (of which, of course there would be but little) would have been previously grubbed up. August, both as a leisure time, and for other reasons, was the best time for all these operations; and pines then and thus slightly cut around will not begin to die until the latter part of the next year. In the spring thereafter all will be dead, and the land ready to yield its first crop. Not only the previous deposite of dead leaves will then have been converted to manure, by combination with the marl, and in a great degree *fixed* in the land, but two subsequent crops of leaves will have been furnished to increase this improvement. In addition, the gradual decay and dropping of first the smaller, and next the larger boughs, and finally of the trunks, all go to give manure to the land. The injury to crops, and obstruction to tillage, caused by the fall of branches and of trunks, will not be considerable during the two first crops; and if the land is then rested for two years, during that time most of the wood will fall without doing harm. The subsequent cutting up and removal (or burning on the ground) of the fallen trunks will indeed be a considerable labor; but not to be compared to a general clearing, by cutting down and heaping and burning, at first. So different in cost are the first year's operations, that fifty acres may be brought under tillage by belting, as quickly and as easily as five acres by cutting down.

A less profitable course than the above described is more usual; that is, the land is generally not marled until after the trees are dead, and the land about to be cultivated. This is an enormous waste of the vegetable material for fertilization. A much better mode than even the preceding would be to marl the land as many years in advance of the belting and cultivation, as the proprietor could afford to wait for the return of the accumulated value. Then the manure crop, (the pine trees) would continue to grow, and every year to give, in the successive deposites of leaves, new coverings of manure, and the marl would regularly combine with and store up the products, and fix them in the soil, instead of all being successively and regularly wasted, as is the case without the marl. I have no experience of such long advanced investments of capital in improvement, and therefore can but state *opinions*, instead of *facts*. But I entertain but little doubt that such a process, if allowed 12 years between a good and equally spread marling, and the after belting and cultivation, would raise to a permanent production of 10 barrels of corn per acre, land which could not long continue to yield two barrels, if tilled, without marling or belting.

BURNING COAL MINES.

From the Mining Journal.

In our last number we gave extracts from letters received of the progressive conflagration of the coal mines in the department of the Allier, which, since the year 1816, had not been subjected to so direful a result as that embodied in the following description, extracted from the *Athenæum*. The late accounts, however, state that considerable progress was being made in turning the waters of the river Gange into the workings, and thus stopping the progress of destruction. The loss, however, must, in any case, be considerable:

"Letters and papers from the department of the Allier, bring accounts of a remarkable conflagration which lately broke out in the coal mines of Commentry, and had been burning for a week with daily increasing fury. It appears that this fire, which, for the last twenty-four years, has been silently smouldering in the bowels of the earth—revealing its existence by perpetual smoke and occasional outbreaks of flame, which, however had always been confined within the limits abandoned to its dominion—had, at length, made its way through some breach into one of the vast galleries of these extensive workings; and there, meeting with the air-current so long denied it, had spread through all the subterranean chambers and passages with a rapidity before which resistance became utterly powerless, showing itself at every crevice and outlet of the vast labyrinth, and flinging its points and columns of fire far up into the air, through all the shafts that led into the wide field of the rich deposit. Luckily the solemnities of the day, it being Sunday, had emptied the workings of their human tenants, for no mortal aid could have availed them against the suddenness with which the fiery flood swept over all things. The authorities of the district were early on the spot, but have hitherto been little more than idle and awe-struck spectators. Neither Vesuvius, nor any other eruption, say the accounts, can give a notion of the dreadful and sublime

scene. 'If,' says one writer, 'it were possible to forget that the flames have been, for three whole days, devouring immense wealth, and that by this conflagration 300 fathers of families will be thrown out of employment, there would be room for no other sentiment than that of admiration at the magnificent spectacle. Imagine a deep ravine, nearly circular, in the form of a reversed cone, with its edges, however, hourly enlarging. Through fourteen large openings, issuing at about twenty feet above the ground of this ravine, and giving access to the innumerable galleries of the mines below, as many torrents of flame are poured forth, with frightful violence from the caldrons within—flames of a thousand hues rushing forth like fiery whirlwinds—dividing, and crossing, and mingling, and rising, and falling, and rising again! At times, a hollow cracking sound echoes through the abyss; this is some huge block of coal detaching itself from the roof or sides of one of the galleries, and falling into the blazing gulf. Then rises up a thick column of black dust, till it reaches the openings of the galleries, where, pierced in all directions by the flames, long serpents of fire work through its volume from side to side.—Sixty feet higher up, on each side of the galleries, two gaping mouths shoot into the air their dazzling columns of fire. Suddenly one of these ceases. It seems for a moment as if checked in its wrath. Then comes a long and startling groan from the entrails of the earth; and forth again rushes the flame, blood-red, roaring and terrible, threatening in its fury to lift up the burning mountain altogether, and bury the spectators beneath its dreadful ruins. Again, look around you; it is midnight, and 2000 human faces are there, some grouped on the opposite crest of the ravine, and some sheltered in the cavities of the rocks. Yet no sound meets the ear, save that of the roaring flames.' The latest accounts state that the rafters of the galleries had all fallen, and the founts of flame nearly ceased to play. The whole had become one huge burning gulf. The loss is said to be incalculable; millions of hectolitres of coal had been consumed. The engineers were preparing to turn the course of a stream, which flows at a league's distance, and direct it upon the burning mountain. Workmen were employed night and day in the operation, by which it was hoped to lay the mines under water."

A later account states "that the river flowed 38 metres beneath the coal-field. A minute survey of the ground was, however, made, and established the possibility of turning the course of a tributary stream, which flowed at a distance of 4,300 metres. The work was instantly commenced; the ground-formations for the bed of the deviation occupied 48 hours; and twice that interval of time sufficed to execute and arrange in their places certain wooden conduits, destined to traverse several intervening hollows. At length the waters so impatiently expected arrived, pouring into the burning mine 2,000 cubic metres of water per day. At the present moment, all the subterranean works are under water; and since the commencement of this month a system of irrigation has been established on the burning mass, which has produced the happiest effects. Hopes are entertained that, in time, not only will the immediate conflagration be extinguished, but that also which has been in operation for 24 years past."

CULTIVATION OF PEAS.

From the Yankee Farmer.

There are probably but few crops that more amply remunerate the grower for the cost of cultivation, when rightly managed, than peas. They constitute a most excellent and nutritious food for hogs, and as they may be raised on almost any soil that is moderately fine and dry, they are justly preferred by many of our most judicious and enlightened agriculturists, to meal or corn.

Land naturally abounding in *red sorrel*, even if it has been rendered sterile and unproductive, by long and excessive cropping, will generally, if subjected to a cleansing crop the year previous, produce good peas.

I have upwards of an acre of "*marrowfats*" now growing on a soil of this description, and which, judging from present appearances, will yield a heavier net income than any other piece of similar dimensions, on the farm; many of the vines having already attained the *length of four feet*, and presenting in their innumerable *pods* and *blows*, the most promising indications of an abundant '*yield*.'

I ploughed the first of May, and sowed (*about three and a quarter bushels to the acre*,*) ON THE FURROW: The ground was thoroughly and carefully harrowed with a light two horse harrow, and the surface smoothed with a "*Drag Roller*," —an implement by the way, of such essential utility that no farmer should, according to my view, be without one, and which any person possessing the most ordinary attributes of "constructive genius," may furnish, in a few hours, for himself.

Some farmers prefer *drilling* their peas. This system is indubitably a good one, but will be found, I think by many, and especially by those who are scant of "*helps*," to involve many and serious inconveniences from which the more ordinary and expeditious method of *broad cast sowing*, is exempt.

I have known an excellent crop to be obtained, by simply depositing a few peas—say six or eight, in a hill with potatoes. They are no detriment either to the growth or cultivation of the latter, as they require a specific nutriment, which they are enabled to obtain without infringing in the slightest degree upon the *pabulum* specifically appropriated to the potato. The fact is now, I believe, generally recognised by all judicious farmers, that *leguminous plants derive but an inconsiderable proportion of their nutriment from the soil*—a fact which is amply and incontrovertibly established by the circumstance of their growing and flourishing in full vigor, for weeks after the *pedicle* or *root-stalk* has become dry for several inches above the surface of the soil, and consequently incapacitated either to imbibe or transmit moisture in sufficient quantity for the growth and sustenance of the plant.

* Many will doubtless regard this as an error; but in my opinion the practice of sowing one and two, and sometimes two and a half bushels to the acre, which has generally prevailed among us, is the radical and efficient cause of failure in the cultivation of peas. I have made several experiments in order to ascertain the *right quality*, and have invariably succeeded best when I have been liberal of my seed. The smaller the size of the pea, the smaller of course will be the quantity required.

By practising this system, several objects of essential importance with farmers are obtained. *First, purity of seed*—a very important consideration with the *neat farmer*, certainly; and, secondly, *cheapness of cultivation*, which under present exigencies, is of no less importance, probably, than the first. More on this topic anon.

EXPERIMENTALIST.

IMPORTANT—EASTERN LANDS.

From the Philadelphia Saturday Courier.

Judge Story recently pronounced a decision in Portland, setting aside a speculative purchase in eastern land, on the ground of a mistake of its value, by the purchaser. The opinion is highly important, as affecting a great many contracts.

There probably has never been, in any country, a more ridiculous farce than was the *wild* speculations in eastern timber-lands, in the years 1833, '4 and '5. In the very eastern portion of Maine, there are millions of acres of land unsubdued. All of a sudden, nobody knows for why, or for wherefore, people got the idea into their heads that those lands were covered with nearly *all* the pine timber there was in the states, and of consequence, purchasers would find themselves compelled ultimately to seek that region for all their supplies. Previously, the price of many of these lands had been as low as twenty-five cents per acre. But maps were drawn of townships, in which the artists were instructed to put plenty of rivers and good water privileges; and above all, to estimate the pine timber very abundant. It was wonderful with what facility they accomplished this task. Townships, where previously only now and then a pine tree could be found, were covered over with ten millions of feet of pine timber to the acre as rapidly and easily as the draftsman could draw the map! It was a sort of magical process—but it never failed to be accomplished for any township, which was for sale—and at the prices to which they soon rose, viz: $6 a $15 per acre, nobody thought of holding on.

Without making a long story of it (which certainly would not be interesting to those who were used up in these wild speculations,) we will say, in a few words that thousands of people in Maine, Massachusetts, Vermont, Connecticut, New-Hampshire, New-York, and from almost all other parts of the union, and not a few from England—were ruined by their attempts to get rich in a day, by investing all they had, and promising to pay ten times as much more for townships and portions of wild land, in and about the region of the Penobscot river, and the Great Lakes, in the State of Maine. The business portion of the city of Portland—one of the finest in the world—was almost destroyed by these speculative operations. And scarcely a town in Maine or Massachusetts escaped their destructive influence. Years will not restore the injury which these wicked speculations produced. They gave people such ridiculous notions as to what they supposed they had made, that they run into all sorts of extravagance, and thus set the most destructive examples to the honesty of trade and industry around them. They broke up men in their regular business, prostrated their business-habits, and set them to lounging about society, living by getting more in debt, instead of working to earn something for themselves—a course which is always to be deplored as of incalculable injury to society.

It has been estimated by a careful business mind, that if what people thought they had made in the eastern land speculations, could have been "realized," not less than one hundred million of dollars would have come out of them! But what a short dream of wealth it was! In a few months the imaginary wealth had departed, and not a man was worth as much as he would have been, if no speculations had existed. They held each other's notes—but what of that! Nobody could pay. You might as well expect to get pay for moonshine. And, to our judgment, Judge Story has performed not only a just judicial task, but a very equitable one, in setting out a decision by which all these false sales can be put aside.

But we must not leave this subject without drawing from it an instructive lesson. We live to learn. The experience of thousands in the eastern land speculations was perfectly paralyzing at the time—but let them think of it only as a guide to all future operations, remembering that there is but one sure way either to wealth or reputation, viz: by the practice of unceasing industry, economy, virtue, intelligence, and uprightness. All speculations are absolutely injurious to any community in which they may occur, in the long run, for a speculator does not add a penny, but abstracts dollars from the wealth of society—and what is equally deleterious, he destroys the straightforward and moral business habits, as far as his operations exert any influence. Society is alone interested in the proper support of correct business men, industrious mechanics, and good agriculturists. *We are uncompromising opponents to all speculators.*

BLUE GRASS, WIRE GRASS, &c.

To the Editor of the Farmers' Register.

Surry County, September 1, 1840.

I would be pleased to be informed through the Register, whether it would be advisable to sow blue grass on our marled lands, with the view of smothering or destroying that great pest, wire grass. Would it not be swapping the devil for a witch? Wire grass follows our marling operations so prompt and certain on light soils, that sometimes I am almost in doubt which would be the wiser plan, to marl the land, and have it improved and well set in wire grass, or have it not marled and poor, without the grass. With the same labor we cannot cultivate as much land by one third as we could a few years ago. I have never seen a field well set in blue grass, and therefore know but very little about it; but I cannot think that it can be worse, or even as bad to cultivate, as one set with wire grass.

We are making a desperate effort to improve our stock of hogs. There have been a good many Berkshire pigs introduced into the county, which are decidedly superior to any thing of the swine species that I have ever seen. There is one (which was farrowed in the county, and raised with Virginia management,) that weighed 117 pounds at four months of age; and I have heard

that Mr. Spratley has a pig, sired by a Berkshire, and out of a half Jersey big bone and Chinese sow, that weighed 150 pounds at the same age. We also have a cross between the Berkshire and Chinese, which are very fine, far superior to the genuine Chinese, and, in the opinion of some, equal to the Berkshires themselves.

I understand preparations are being made to transmit to you the number of persons engaged in marling in this county, their success, &c. Our crop of apple brandy is exceedingly short, and as for peach, I believe there is none made at all; if there has been, I have neither seen nor heard of it.

A FARMER.

We infer that the first question of our correspondent is founded on the several recommendatory notices of Kentucky blue grass, which have appeared in the Farmers' Register, extracted from western agricultural papers, and more of which will follow in this number. The popular nomenclature of grasses is so confused and contradictory, that it is very uncertain what is meant by any name used in a different region from our own. But we believe that what is called "blue grass," in Kentucky and Tennessee, is not the abominable weed which we know by that name on our rich and stiff corn fields and wheat fallows, (though a valuable pasture grass); but is what is here called *greensward*, and sometimes *goose-grass*. We shall be pleased to have our readers instructed in this respect, by either of our subscribers, Judge Kennedy of Tennessee, or Thomas B. Stevenson, esq. of Kentucky, both of whom are well informed on the subject.

There is still another grass, better known in lower Virginia under the name of blue grass. This is a luxuriant and valuable wet meadow grass, having long broad leaves, in part tinged with purple.

BARK BREAD IN NORWAY.

From Laing's Norway.

Many pines were standing with all their branches dead, stripped of the bark to make bread, and blanched by the weather, resembling white marble,—mere ghosts of trees. The bread is made of the inner rind next to the wood, taken off in flakes like a sheet of foolscap paper, and is steeped or washed in warm water to clear off its astringent principle. It is then hung across a rope to dry in the sun, and looks exactly like sheets of parchment. When dry, it is pounded into small pieces, mixed with corn, and ground into meal on the hand-mill or quern. It is much more generally used than I supposed. There are districts in which the forests suffered very considerable damage in the years 1812 and 1814, when bad crops and the war then raging, reduced many to bark bread. The extended cultivation of the potato since that period has probably placed the inhabitants of the lower country beyond the necessity of generally resorting to it; but the 'Fjelde' bonder uses it more or less every year; nor is there any good reason for supposing it unwholesome, if well prepared; but it is very costly. The value of the tree, which is left to perish on its root, would buy a sack of flour, if the English market were open. They starve, and we shiver in our wretched dwellings, although each country has the means of relieving the other with advantage to itself.—

BLUE GRASS.

Reply to inquiries concerning the quality and preparation of blue grass lands, time of sowing seed, etc.

From the Southern Cultivator.

Sir—Having had my attention directed to the inquiries of Dr. Douglass, of Hickman county, in the last No. of the Cultivator, and having some years of successful experiment in the culture of blue grass, I would respectfully communicate such facts as I have in my possession, and the conclusions they have led me to in regard to the same.

In February, 1838, I sowed 70 acres of woodland in blue grass seed, at the rate of ¾ bushel of blue grass seed and ¼ timothy seed to the acre. Previous to sowing, I cut down all the undergrowth and smaller trees leaving the tops piled upon the ground, and raked up and burnt the leaves, clean. When sown, I turned my stock in to trample it in; which they did effectually, in browsing about after the green brush. So soon as the seed began to vegetate, I turned the stock off it, and suffered nothing to run upon it till the grass went to seed again. From this sowing I obtained a fine stand of grass.

The same season, I sowed upon open ground, with the same seed, and failed to get any thing like a good stand. I am satisfied the grass after germination was killed by exposure to the summer sun.

In February, 1839, I sowed 40 acres in woodland prepared and managed in the same way; with the exception that the quantities of timothy and blue grass seed were equal, and obtained a very excellent stand of grass. At the same time, I again sowed in open ground, out of the same lot of seed, and it again resulted in an entire failure. My land is a fair specimen of the rich limestone soils of Maury county, and is such as is believed best adapted to blue grass. From my own and the experience of others, I am satisfied that fall sowing is not to be recommended in this climate. Our long and late droughts in the fall; which are so frequent, render it extremely difficult to get a stand of grass from seed sown at that season.

From the facts stated above, and others I might mention of a similar character, I am driven to the conclusion that thinly timbered woodland, in this latitude, is preferable for blue grass to open land, on account of the greater certainty of a stand, with this remark, however, that where a stand *can* be obtained on open ground, the grass is doubtless sweeter and more nutritious, on account of the full exposure to the sun. And I would here suggest it as my opinion, that timothy sown with blue

grass at the rate of one half bushel of timothy seed in the chaff and one half bushel of blue grass seed to the acre, adds greatly to the chances of procuring a good stand upon open ground, from the fact that the timothy springs up soon and affords a shelter to the young blue grass, protecting it from the intense heat of the sun. The blue grass will *take* the timothy in the course of two years. Neither the timothy or blue grass seed require ploughed ground; but both do better on an unploughed surface. Wet seasons are favorable to grass sown on open ground.

I would recommend sowing in January or February—because there is at that season always moisture enough in the ground to germinate the seed. I would advise having the ground clear of leaves at all hazards, that the seed may come in contact with the surface of the soil. Some farmers scatter shattered corn over the ground after sowing blue grass, and turn their swine in, which in searching after the corn, effectually trample the seed in. This is doubtless an advisable plan. For the same reason, I leave the green brush of the cleared timber on the ground, and turn my cattle in. It is highly important to take the cattle off, so soon as vegetation begins.

Dr. Douglass does not say whether or not he took the requisite pains to have the seed trampled in. But as he states that they were "foreign seed," I am very much inclined to think with him that his failure is to be attributed to the use of old and injured seed. It is certainly the best plan, when practicable, to buy of a neighbor known to be a gentleman, or when once getting a start, to make your own seed.

Very respectfully,

EVAN YOUNG.

Maury county, Aug. 6, 1840.

BLUE GRASS.—ITS CULTURE.

From the Southern Cultivator.

Mr. Editor:—Perhaps I should have waited for some farmer of more learning and experience to answer Dr. Douglass' inquiries on the all important subject of sowing blue grass—but as I have had some considerable practice, I shall proceed to give him the benefit of it. Though at the same time, if any other farmers should offer theirs you may lay mine aside if you think proper, without any injury to my feelings.

On my first attempt at blue grass, I sowed the last day of September, in woodland on the ground in its natural state, only removing the greater part of the logs and under brush. The leaves had just begun to fall, which put my seed completely on the soil. I then turned all the stock that I could raise upon it, and kept them upon it some six weeks; after which I let very little stock upon it till after harvest the next year. I then grazed it off close. Even then my grass made but little show; but the next spring I kept the stock off from Christmas until the seed ripened. I then turned on all my stock, grazed it off close, and it being very dry, that was not hard to do. In the course of five or six weeks there came a rain, and I took off the stock and in a few days my blue grass assumed the appearance of an oats' patch in the spring. I let it go to seed the second year for the purpose of saving seed.

Last year I sowed an old lot with blue grass and rye. It set in very dry. Though a great deal of the seed sprouted, and some of it came up, I thought it was entirely lost; and I pastured it all the winter and spring. To my great surprise, this fall, I find at least a sufficient stand. By letting it go to seed one year, there will be plenty.

I also sowed some of my own raising last winter in woodland, rough, and a great many leaves on the ground. I put the seed down in January; then turned in all my hogs and scattered over the ground shattered corn, which made my hogs root it in nicely. This lot also made a good stand of grass.

One of my neighbors sowed in March last year; he cleared the ground nicely of leaves and litter, and I think he got a more regular set at first than mine did, owing to the leaves, as I have discovered that in spots where the ground was entirely naked the seed vegetated much sooner.

At my first sowing there was a spot of seven acres off of which I did not cut the saplings the first year, and I found no grass there. The next winter, I took them off, and there is now a good set without more sowing. So my experience teaches that if you put seed on the ground of a good quality, you will have some grass under any circumstances.

But care should be taken not to pasture much until it goes to seed once; even then, it is worth a great deal more to let it get up well in the spring. From what I have stated, it may be inferred that I look upon *good seed* as being a most important matter. In truth, I for one am disposed to believe that Dr. Douglass had *bad seed*.—As he has been unfortunate, I will try next year to save seed, and if he will send, I will try to let him have some that I will insure to come up.

JAMES JONES.

Maury county, Aug. 7, 1840.

A NEW AND EFFECTUAL METHOD TO KYANISE TIMBER.

From the Observer.

Within the last two or three weeks the Manchester and Birmingham Railway Company have commenced Kyanising their wood sleepers in a much more quick and effectual manner than by the old mode of simply depositing the timber immersed in the prepared liquid. The company have had made a large iron cylindrical vessel, weighing about ten tons, and which is about thirty feet long, and six or seven feet diameter, made from wrought iron plates, five-eighths thick, and double riveted, which vessel is capable of resisting a pressure of 250 lbs. on the inch. The vessel being filled as compactly as possible with wood sleepers, twelve inches broad and seven inches thick, the liquid is then forced in with one of Bramah's hydraulic pumps, and worked by six men to a pressure of 170 lbs. on the inch. By this means the timber is completely saturated throughout in about ten hours, which operation, on the old system, took some months to effect.

REPORT ON PROFESSOR SHEPARD'S ANALYSIS OF THE SOILS OF EDISTO ISLAND.

"*Resolved*, That the communication of Professor Shepard be referred to the Special Committee on Soils, with instructions to report, how far the analytical information it discloses, agrees or conflicts with the practice of the Planters of the Island, as exhibited in the application of their manures."

The committee to whom was referred the above resolution, beg leave to report,

That the following table exhibits, in one view, the various properties of the soils* subjected to analysis.

	When dried.									
	Water of Absorption.	Lost	Organic Matter.	Increase in weight after being thoroughly drenched in water.	Rates of drying from a condition of saturation.	Silica.	Alumina.	Water of absorption and organic matter.	Peroxide of iron with carbonate of lime and phosphate of lime.	Carbonate of lime.	Phosphate of lime.	Peroxide of iron.	Oxide of iron and phosphate of lime.
Pure Sand													
A		2.37	2.66	321.		92.57	1.70	5.03	0.70				
B		2.83	3.83	342.		91.64	1.70	6.16	0.50				
C		2.66	1.90	305.		94.00	0.94	4.56	0.50				
D		1.66	1.75	293.	14.0 of water.	95.00	0.79	3.41	0.80	0.35			0.60
E		2.83	2.16	325.		93.00	0.81	4.99	1.20				
F		2.36	2.41	315.	11.0	93.23	1.05	4.77					
G		11.36	8.33	480.	12.0	61.75	9.00	23.66		0.29	.20	5.80	
H		14	9.66	605.	28.7								
I				235.	39.0								
K					6.8								

* Although the samples were taken from one plantation, yet it is believed that they afford fair specimens of the soils of the Island, except those which produce "blue cotton." A, B, I, K, were mud samples.

With regard to the cotton crop, F is the poorest in production; H, the best. The former, whose capacity for water is the least, is distinguished by the smallest quantity of organic matter; the latter contains comparatively a large amount of carbonate of lime. The following is the relative order of the soils in reference to fertility: H, C, G, E, D, F. Further information, concerning the question propounded by the society, will be furnished in the sequel of these remarks.

The interesting inquiry in relation to the food of plants, is still unanswered. The earliest theory on this subject, emanating too from practical men, was in favor of decomposed organic substances. Whilst one, skilled in the science of vegetable physiology, pronounced water, another oil, and a third pulverized earth, as the great desideratum. Dr. Priestley insisted on phlogiston, and Kirwan on charcoal, as the true aliment. The elements of vegetables are few and very similar. The most essential are oxygen, carbon and hydrogen. The various combinations of these elements make up the varieties of the vegetable kingdom. In like manner, the general soil consists of few elements; of which silex or sand, alumina or clay, and lime, carbonic acid, nitric acid, sulphuric acid, and iron, are the chief earths, acids and minerals. These substances, which are united in various degrees, produce the numerous modifications that characterize soils possessing the same constituent principles. The atmosphere, it is well known, is composed of the two gases, oxygen and azotic or nitrogen. Whilst plants, which derive nourishment, as well from the air by inhalation of their leaves, as from the earth by absorption, excrementitiously throw off the oxygen, which is necessary to animal life, they render the nitrogen fit for respirable air by decomposition: thus contributing by a two-fold operation to the perpetuation of every created thing with which the earth abounds. Modern writers seem to concur in the belief that, although plants need a variety of soils, adapted to their constitutions, they perhaps require no specific nourishment, each species being endowed with the capacity of converting food to the sustaining of life; in other words, that substances of every description, whether solid, fluid or gaseous—that light, caloric, gravitation, attraction—all were designed as necessary agents in the formation of the great family of vegetation. It is nevertheless true, that the primitive earths in their pure state, or when mixed in proper portions, are barren;* further, that the living fibre is composed of what was originally living fibres—and that in decomposed animal and vegetable matter every constituent† is embraced which theorists have successively maintained is the food of plants. Be this as it may, it is certain that for any substance to constitute aliment it must exist in a soluble state, to be reduced to which, air and moisture are indispensable. Hence, by breaking up and frequently stirring the ground, the great object of tillage is effected. But these natural agents are alone incapable of converting

* See experiments of Giobert. Loudon's En. of Gard.

† "All animal substances are resolvable into hydrogen, nitrogen, oxygen, carbon, phosphorus and sulphur. Dung, or the mixture of animal and vegetable matter, contains all these."

all the insoluble matter of a soil into geine.* To accomplish this purpose, the aid of artificial stimuli is necessary.

The soils of the Sea Islands are alluvial, or the result of the deposition from rivers. The productiveness of alluvium is ascribable to the finely divided matter of which it is composed. By freely admitting air and moisture, geine, which the Massachusett's chemist maintains is the pabulum of plants, is quickly produced. The ready solubility of organic substances in a sandy soil, from the cause already assigned, is the reason why manures have so speedy an effect; at the same time it accounts for their evanescent character. Chemical tests, however, are not always infallible guides for the cultivator. To perfect the work in which science invites him to engage, minute examinations on his part are clearly called for. Successful tillage is influenced materially by the depth of the mould or crust of the earth, and the nature of the subsoil. The cotton plant has a long tap-root, which penetrates always, unless a very wet season, or some obstacle intervenes, below the soil.

It requires no argument to show that, if the product of a crop mainly depends on the quantity of food with which it is supplied, the deeper the mould, the great laboratory of nourishment, the more abundant will be the harvest. Again, two soils may agree in every material point in their elementary parts, yet, in production, will be very dissimilar. The difference is traceable to the subsoil. By the influence of an absorbent, clayey substratum, sandy lands are rendered prolific, whilst without this mechanical assistance they might have remained in comparative sterility. So, the fertility of a clay soil, obviously too retentive of moisture, may be owing to the sand or gravel on which it stands. The soils which are of a good depth, and rest on a clay foundation, are decidedly preferred for the cotton crop. The black, or flat dark gray lands, as they are generally wanting in one or both of these important agents, cannot be relied upon. This is probably the true explanation why F and D, under no system of management, have yet repaid the labors of the cultivator. Distinguished as H is in both of these valuable properties of the best cotton lands, its superiority is at once in part accounted for. In fine, it would not be hazarding much to say, that production, so far as the principle of mechanical agency is involved, depends as much on depth of soil, and the nature of its substratum, as upon the proper admixture of the earthy parts of the soils themselves.

The samples analyzed are described as being uniformly sandy, containing in one hundred grains over ninety-one parts of silica. Although in them there are only "feeble traces" of the carbonate of lime and of the sulphate of lime, yet, it must be remembered, that a small fraction only of either enters into the composition of plants; and that "a crop may fail from the want of a single grain in a hundred of those elements."* The amount of organic matter is small, though not remarkably so, for all alluvial soils, it is believed, are wanting in this respect. The almost entire absence of calcareous earth was unexpected. In the prosecution of their duty, having been led to examine this subject, the committee find what indeed is a striking fact, that the soils of America, unlike those of Europe, are very deficient in this substance, some of the latter containing over 50 per cent. and nearly all of them a large per cent. "Out of one hundred and twenty-five specimens of soils from all parts of Massachusetts, and several of them from lime-stone regions, only seven," says Edward Hitchcock, professor of chemistry in Amherst college, "exhibited any effervescence; and even these, when analyzed, yielded but a very small per cent. of carbonate of lime." The same writer remarks, "I have recently examined five of some of the richest soils of Ohio and Illinois, and although I find calcareous matter in all of them, yet the average quantity is not over 2 per cent." A similar statement has been made respecting the soils of Virginia, and of some of the western states, even in limestone regions, by Mr. Ruffin, the able editor of the Farmer's Register.

"May not the peculiar fertility of new Sea Island cotton lands," asks Professor Shepard, "be owing to the proportions of comminuted shells natural to such soils, and the deterioration of these lands under long cultivation, ascribable to the exhaustion of carbonate of lime?" To the latter query the committee would answer, that chemical tests prove that in the formation of plants, as already noticed, the quantity of lime taken up is very inconsiderable. This, superadded to the acknowledged fertility of our western lands over those of Europe, is strong evidence, that the productiveness of soils does not depend upon the amount of calcareous matter, but that a small per cent. only is necessary. The committee are unable to see how any soil can be deprived of its calcareous constituent, which does not at the same time lessen the quantity of all its earthy ingredients. Lime is one of the primitive earths. It cannot, therefore, take a gaseous form, nor can its nature be changed. If there was a time when our soils contained more of the carbonate of lime than they do at present, it follows that, as lime is indestructible, it must now exist in some other state of combination than the carbonate: perhaps in that of the oxalate of lime, a powerful promoter of vegetation. If so, the exhaustion of the carbonate of lime is not one of the causes of the present deteriorated condition of the Sea Island cotton lands.

Acquainted as we now are with the main defects of our soils, the important question is presented, how are they to be amended? Before an answer is given, the committee would briefly advert to two prominent errors in our system of husbandry, under which we have long labored.

1. The keeping of large stocks. The plantations of the Sea Islands are small. About one half is cultivated annually—the remainder is allotted to the support of domestic animals. In autumn, looking only to the spontaneous production of the earth, a cheerless waste is exhibited. As bounti-

*"Geine is the decomposed organic matter of the soil. It results chiefly from vegetable decomposition. Geine is either soluble or insoluble. The latter is converted into the former by the action of lime. Acting neither as an acid nor alkali, it is converted into a substance having acid properties by the action of alkali, and in this state combines with earths, alkalies, and oxides, forming neutral salts, which may be termed geates. Soluble geine is the food of plants."—*New Method of analyzing Soils, by Dr. Sam. L. Dana, of Lowell.*

* Assertion of the late Timothy Pickering.

ful to the southern planter as nature invariably is, where overdrafts on her munificence are never made, her resources at that time become exhausted and the offal of the gathered crop furnishes the only means of conducting his stocks safely through the ordeal of winter. Accordingly, for two-thirds of the year, they furnish neither milk, butter, nor meat, for the ordinary consumption of the plantation; and at no time are they capable of profitably promoting any of the ends for which elsewhere they are so justly celebrated. Engaged as we are in the culture of one of the most valuable commodities in the world, the raising of cattle for sale is prohibited by the common dictates of prudence. For their manure and for table use alone are they considered worthy of attention. To subserve these purposes, a small number only, especially of sheep, is necessary. The pursuits of the grazier and ploughman, if in the attainment of their ends they respectively depend upon the same grounds, are in direct collision. Both cannot succeed unless at cost of labor and of time which would soon annihilate their profits. If the former prosper, is not the husbandman thereby deprived of the natural food for his plants? If the latter hope for a lucrative harvest, it can only be effected by circumscribing within very narrow limits the pasturage of the grazier. The injury sustained by the *depredations* of stocks, according to our present improvident plan of husbandry, may be ascertained with some precision. As a preliminary suggestion it may be remarked, that the sheep has an insatiable appetite. If not gratified, in the strong language of "Arator," he dies; if it is, he depopulates the country. Liable to numerous diseases, he has never been a lucrative object where tillage was the main support of the people. He is reared too at a much greater expense than the cow, and furnishes for the table perhaps not one-fourth of the food which is provided by that useful and hardier animal. Each head of black cattle annually keeps bare of grass, in ordinary seasons, about two acres of ground, and each head of sheep, perhaps three acres. Now as the land, where this system of unrecompensed pillage is carried on, is designed by the owner for his crop of the following year, it is fair to conclude that, as the planter is engaged with his whole force between two and three months in collecting putrescible substances to supply the place of the food which the tooth has destroyed, a large portion of that time is in effect appropriated to the support of his cattle. Were their number greatly reduced, probably only one-half of the manure which necessity now obliges us to procure, would be needed; that is, if we be satisfied with the present amount of artificial fertilizing matter—otherwise, we could duplicate the quantity now gathered. When we look at the poor and degenerated condition of our stocks, the denuded state of our pastures, and connect these with the startling truth, that, in despite of apparently well directed efforts, our lands in regard to their productive powers are stationary, if not retrograding; the conclusion is irresistibly forced upon the mind that, in furnishing the domestic circle with some of the necessaries of life, a price is substantially paid equal to the joint labor of the planter and his slaves for one or two months. If an ample supply of the best meats and the comforts of the dairy be an object of importance, a small stock only will furnish it. If to add to the amount and improve the quality of manures be desirable, look to the same source; for English authorities, sustained by the undivided opinion of the New England farmers, assure us, that ten well fed cows produce more manure and of decidedly more enriching properties, than fifteen whose allowance has been stinted. Should a larger provision in vegetable aliment be sought for, let not the tooth and the hoof thwart the efforts of nature to aid us. From facts in the possession of the committee, and from careful observations, they are led to think, that ten head of black cattle and four of sheep to every hundred acres, would be about the true proportion for our arable lands.

2. The culture of too much land for the force employed; and, as a necessary result, insufficient manuring. It is known to the grower of cotton, that his harvests are rarely gathered from the whole crop, but only from those portions where the soil is naturally productive, or where a large amount of proper nutriment is applied. The number of acres cultivated to the hand is from three and a half to four. The usual quantity of compost manure per acre, which the unceasing labor and perseverance of the planter have as yet enabled him to furnish, is from twenty to thirty cart-loads. Is not this too meager an allowance? The substitution of quantity for fertility is indeed an exhausting operation, without a single principle to recommend it. To provide abundantly, therefore, for the wants of our soils, rather than to deprive them without reciprocation of their natural ingredients by too extended cultivation, is demanded by the weightiest considerations. The committee will not comment on the saving of labor and of time, now in a great measure unprofitably expended—or the great facility of attending a small crop—or that thereby the planter may have it in his power to adopt in part the inclosing system—or at least to allow his lean and dwarfish animals more and better food; but they will assume the impregnable position, that a given quantity of decomposed organic matter to an acre on exhausted land will yield a larger return than if the same had been placed on one and a half or two acres. The history of agriculture and of horticulture in England and America bears ample testimony to this interesting fact, and perhaps on no question in husbandry are writers so well agreed. Without bringing to the notice of the society the mass of evidence in confirmation of this proposition, concerning, however, the numerous crops that are elsewhere raised, they would at once, as having a direct relation to the object of their solicitude, state the results of only three among many trials made on this island. The last season a member of this society used on an acre of good ground eighty-four cart-loads of marsh and mud—the former greatly preponderating. From it he gathered three hundred and ten pounds of clean ginned cotton. His general crop yielded about one hundred and ten pounds per acre. In 1832, another member directed his overseer to double the usual quantity of manure for a few acres, which were marked by the usual indications of sterility. Indeed they were in appearance so extremely poor, that the cotton plant, through their agency, could scarcely be said ever to have reached the point of fructification. From some misapprehension, the orders of the owner were exceeded, and the unprecedented amount of eighty-four cart-loads of

mud and eighty-four of compost to the acre was applied. The product was not only as large as that of any other portion of his crop, but, although eight years have since elapsed, the field so bountifully assisted at that time still displays its gratitude to its cultivator by the abundance of its fruits. In 1837, one of the committee, in order to ascertain, whether an unusual quantity of compost manure was unfavorable to the production of cotton, or had any effect in bringing about a new growth in the plant, tried the following experiment. On twenty-four acres of high, sandy land, a part of which was very light, there were put about twelve hundred ox-cart-loads of well rotted substances, (of which marsh formed the principal part,) from the stable and cattle pen. These were thrown broad-cast, and the land immediately listed. The rest of the crop received of compost twenty horse-cart-loads per acre—or of mud, fifteen cart-loads—of marsh, five cart-loads. The spring was cold and wet, and from three gales of wind great injury was sustained. Early in August, all of the cotton, *except the twenty-four acre field*, took a second growth. *That* suffered in no respect, save from wind. It matured very rapidly, and the yield was over two hundred pounds to the acre. The remainder of the crop, except H, from which was picked about one hundred and twenty pounds per acre, produced on an average fifty-five pounds to the acre. In reference to these and other instances of large returns from increased quantities of manure, it has been said, that three and a half or four acres to the hand cannot be assisted to the same extent. Granted. But may not one half or perhaps two-thirds of that number be? If so, the path of our duty is plain. If the owner of thirty laborers makes annually two thousand cart-loads of manure, is it better that that amount be placed on one hundred acres, or on seventy or eighty acres? That is the question to which a thousand well directed experiments, and every year's experience on our part, are ever ready to reply. The committee will conclude their remarks on this head, by recommending, that the practice of an equal division of our plantations be continued, but that only two and three-quarters or three acres to the hand be hereafter cultivated. In this way, there will remain in every enclosed field probably a large space of ground, which, in effect, will be an addition to the landed capital of the planter.

The ill success frequently attendant on compost manure, arises chiefly from its improper distribution. Instead of being strewed in the middle of the alley, it should be used *broad-cast*. In no other mode can it be thoroughly incorporated with the soil. By the old practice, cotton suffers in drought from the heating effects of the mass through which the tap-root passes. In sudden wet after dry weather, the excess of stimulus, which the plant from the position of its trunk is obliged to imbibe, deranges its functions, and brings on disease, and hence a shedding of its fruit.

Whether manures should be put on or under the listing, is yet an undetermined point. In this section of the State, the latter is considered the preferable plan. Manures are lost by evaporation and infiltration. If to the gases belong their more active ingredients, it follows, that under the listing is their proper place; if to the salts, then they should be covered very shallow. Manures near the surface certainly promote the growth of our staple crop, when young, to a greater degree than where deeply buried; and as the season of spring is now invariably cold, it may not be an injudicious method. Every attentive observer, however, no doubt has remarked, that the result is in favor of the manures below the listing. The product of cotton, in the few instances known to the committee, being greater, though the plant itself was not always taller. From this an inference may be drawn, that the manure, which from its proximity to the surface, first displays its power, is the first and the soonest eventually to part with it; in other words, that by evaporation the greater loss is sustained.

The committee are now prepared to invite the attention of the society to the following means of renovation, which, if discerningly used, may be instrumental in restoring to our soils the vegetable matter of which it has been deprived by a long course of mismanagement. For the sake of convenience, they will be denominated positive and negative means, and first of the latter.

Rotation of crops.—On this subject there are two theories. 1. That whilst the continuous cultivation of any one crop deprives the soil of the specific aliment essential to its fructification, another plant, requiring some other food, may be advantageously substituted. 2. The celebrated botanist, De Candolle, says, "of the nutriment which vegetables receive and digest, they exude an inconsumable or innutritive portion by their roots. This excrementitious matter is supposed to unfit or poison the soil for a second crop of the same kind, until it is either consumed or neutralized by cultivation." May not this be the true reason why it is so difficult to "set cotton" on land planted for three or more consecutive years? As soon as the plants recover from their sickly state, and this takes place when the poisonous substance discharged from their roots is destroyed by tillage, the crop grows as vigorously, and the product is usually as good as on rested lands, where the same amount and kind of artificial nourishment have been applied.

The soils best adapted to cotton are cultivated every alternate year: the low black or dark gray lands being appropriated to corn. Guided by the lights of experience, it may with confidence be stated, that the two crops cannot, under any circumstances affecting seasons or management, profitably succeed each other. If, however, in the inclosed field, there be any number of acres suited to the raising of cotton, not desired to lie fallow, the sowing of oats, rye, Indian corn, in the drill, but especially peas, is strongly recommended. Whether the benefits of the two first proceed from the levelling of the ground, or that the quantity of nutriment is greater than that arising from grass and weeds, is unimportant; it is enough to know that the soil is thereby very considerably improved. Peas, called by an old planter of a sister state, the clover of the southern country, where an accession of vegetable matter is the primary object, should be put in the ground early *in April* and hoed but once or twice. A small product only will be the result. The growth of grass, however, which at a late period will be more than ordinarily abundant, with the increase of the leaves, stems, and ungathered portion of the pea crop, (seed only being saved,) will give double the amount of soluble substances, which, if the land had been at rest, it could have produced. Peas

sown in August is not an amender of the soil, unless ploughed in immediately before the period of ripening. Cotton after potatoes, allowing one year to intervene, succeeds well.

Ploughing in growing vegetables—summer or fall listings.—The former operation has been practised since the days of ancient Rome; and although there is much contrariety of opinion as to the time when vegetables should be restored to the earth, yet all agree that the process, either in a green or dry state, enriches the land. Dr. Dana is certain that "dry plants give more geine than green." Sir Humphrey Davy remarks, that "all green succulent plants contain saccharine or mucilaginous matter, with woody fibres, and readily ferment. When they are to be employed for enriching a soil, they should be ploughed in when in blossom, for it is at this period that they contain the largest quantity of easily soluble matter, and that their leaves are most active in forming nutritive matter." The experience of the best farmers in the eastern states seems to favor the views of the American chemist. Should the land be inclosed, it would be advisable to postpone listing it until autumn. The observation concerning the time when peas should be turned in, is equally applicable to oats, rye, and Indian corn, in the drill. The first is ripe in June, and the last attains its full growth, (it never bears fruit,) about the middle of July. It is then not too late for the earth to bring forth abundantly of her resources.

If pine trash, rushes, or other matter, difficult of fermentation, be designed to be used, its incorporation with the soil at as early a period as possible is recommended. Planters object to summer listings, because the sward being removed, the ground is exposed to the direct action of the sun, and thus evaporation is increased. This in part is certainly true. It was formerly the practice in northern countries, in order to insure rest to lands in the producing season, to prevent them by repeated ploughings from yielding any thing. This is known as the naked fallow system, which, on scientific principles, is erroneous. By an uncovered surface evaporation is not only augmented, but it is rendered greater too in proportion to the levelness of the ground. Even a partial cutting down of the beds, therefore, on which the last crop was raised, will, to the extent to which it is carried, aid in extracting from the soil its nutritive properties. It is important, however, in this inquiry to remember, that the tops of the old ridges are in general bare, and that in removing from them only earth enough to effect a slight covering of the vegetable matter placed in the alleys, the injury arising from the escape of the gaseous effluvia cannot be materially increased. If, nevertheless, this inference be not correct, it will detract but little from the proposed plan of amelioration.

Although the committee cannot concede the position, that the atmosphere is the great matrix of manures, yet it is undeniable, that plants do derive a very large portion of aliment from that source. On this principle is founded the system of deep ploughings. By it not only the soil but the substratum, if exposed a due length of time, will receive the salutary influence of the atmosphere. In reference to the immediate topic of consideration, the gases which the partial decomposition of the vegetable substances, only in part buried as proposed, might emit, are necessarily taken up by the growing herbage, or crop, if one be subsequently sown, and by this means their valuable agency is retained and extended. The objections consequently to summer listings, unless done too late for the earth to give a coating of grass, do not in theory possess that weight to which it is thought to be entitled. In practice, the plan, it is experimentally known, where rushes or pine-straw is used, is decidedly proper. The breaking down and softening the woody fibre, and thus preparing it for the process of fermentation, is the important point which is gained. It is asserted too, that, in this way, the destruction of bugs and other insects, or their eggs, may be effected. The frosts and rains of winter will further the progress of the good work. It may not be unimportant to state that, if the listed land be inclosed, that part of the surface which is exposed may be soon shaded by sowing the common field pea. Evaporation will thereby be prevented, and a useful addition made to the store of vegetables.

The inclosing system.—To whatever extent the industry, skill, and resource of the planter may enable him to provide for the improvement of his lands, it is not probable that, according to any known scheme of management, he will ever succeed in furnishing an impoverished soil with the quantity of aliment its wants really require. The planters of this island do annually manure every foot of ground which is cultivated in cotton; and, it may be added, in provisions too.* Still the amount of food per acre, apparently large, is far short of what their interests would invite them to apply. They cannot succeed in returning to the soil even for one year perhaps the one half of the nutriment originally furnished it by nature. Other means of melioration then must be resorted to. Clover and plaster are not adapted to our climate, and no foreign or domestic grasses have yet been substituted for them. The inclosing system, therefore, strongly invites our notice. To adopt it in part, which only is practicable, the planting of less ground for the force employed, and the keeping of smaller stocks, will of course be measures of necessity. All enemies to composts on scientific principles, (and in this class are comprehended many intelligent farmers, or those who have failed in the application of them,) seem to coincide in the belief, that the inclosing system offers the readiest mode of returning to the soil the organic matter of which repeated croppings may have deprived it. It especially recommends itself for its saving of time and money to the planter, and of labor to both man and beast. In order, however, to reap its full benefits, the land should be levelled in the fall, and in the following autumn listed for a crop. "To draw from the atmosphere† the greatest quantity of manure, to check the loss the earth sustains from evaporation, during the process of shade, to give the manure the most lasting form, and to deposite it in the most beneficial manner,

* To accomplish this, one cart to every five laborers is necessary.

† The experiment of the willow—planted a slip in a box, containing two hundred pounds of earth, and at the end of a few years, exhibiting a tree of two hundred pounds weight, without having diminished the earth in which it grew, demonstrates the power of the vegetable world to extract and to elaborate the atmospherical manure.—*Taylor's Arator.*

are," in the language of Colonel Taylor, "the primary objects of the inclosing system." The objection to Arator's theory, in its most comprehensive sense, is, that, in the creation and sustaining of vegetable life, the earth is made to play a subordinate part—nay, that it is the mere home of plants, without the ability of contributing to their subsistence. If nothing is nourishment to a vegetable but what enters into the permanent composition of a vegetable, the conclusion is irresistible that, as all plants on analysis yield an earthy product, and the product is found to partake most of the earth that predominates in the soil, producing the analyzed plant, earth is necessary to plants as food. That air,* however, is essential to vegetables, is conceded. A seed deprived of air will not germinate, and a plant placed under an exhausted receiver, will soon perish.

Of positive means of melioration—manures.—Manures may properly be divided into three kinds, manures of nourishment, manures of stimulus, and mechanical manures. Of the first the committee have already spoken. In relation to the second, it may be remarked, that whatever substances enable plants to digest more than under ordinary circumstances they could consume, and accelerate decomposition, are manures of stimulus. Hence the efficacy of salt, lime, gypsum, &c. Mechanical manures are those which effect modifications of the component earthy parts of soils, by which they are enabled to increase or diminish their absorbent powers. Of this description is the addition of clay to sand to make it more retentive, or of sand to clay to lessen the tenacity of the latter.

The long mooted point concerning the relative advantages of long and short muck, has been settled by a series of experiments instituted by scientific men. Short muck will give the best crop the first year; long muck, the second. In regard to cotton, the former is preferred, because its early efficacy is indicated in the production of bottom fruit—because, the plant being rarely overstimulated, the inevitable result where fermentation is too rapid, a new growth is prevented—because, by the use of the latter, the looseness of the soil is increased, and the escape by evaporation of carbonic acid† with ammonia is of course materially assisted—because, as our fields are planted every alternate year, no advantage would accrue from long muck, except to the grasses, even if it be true that its effects are more decidedly beneficial the second season. Decomposition, it ought distinctly to be remembered, should not be carried so far as to present only a black mass, without heat or smell.

Cotton seed.—This is undoubtedly a manure of nourishment. Its value is derived from its oleaginous property, as all oils are composed of carbon and hydrogen. On high lands, from four to six quarts of *live* seed to the task row, (one hundred and five feet,) where the ground has received a coating of mud, at the rate of forty cart-loads per acre, may be relied upon with perhaps more certainty for cotton, especially of an irregular season than any other application. If used alone, a half-bushel, or even a less quantity, should the land be not too poor, is the proper amount. For dark soils, it is thought no manure answers better, particularly if combined with marsh-mud. To corn, from one peck to a half-bushel to the row, *below* the list, it is of greater benefit than three bushels of the best compost.

Marsh.—In a green state from twenty-five to thirty cart-loads per acre ought to be applied. If decomposed, a smaller quantity may be used. Autumn, or early in the winter, is the proper time for turning it into the ground. It is an advantage to all soils, but especially to those of a black, or dark gray color. Listing it, in the summer is often attended with the happiest consequences. Where this is done, it sometimes happens that, in light lands, the cotton-plant becomes "blue." It is hence advisable to postpone imbedding it until a later period.

Rushes and pine trash.—Both of these vegetable substances need artificial aid to convert them into geine. By the usual processes of nature, they are scarcely brought to a completely soluble state in two years. By being buried in summer, as already advised, they do exercise nevertheless a material influence on vegetation; and this arises, in reference to the first, from the decomposition of the mass of spongy matter which at that time is contained in the body of the plant; secondly, from its saline properties and its attraction for moisture. With the constituent parts of pine trash the committee are unacquainted. In a drought, put around corn, it will revive it and restore its greenness of color as quickly as salt. It is known too, to our most experienced planters that, if used alone, its efficacy is only apparent on light and dry lands. From these facts the inference is drawn, that it ministers to the growing crop by collecting and retaining moisture. Another reason why, if undecomposed, it should be covered in summer, suggests itself. It is believed, that pine straw contains an acid principle, which in time, through the agency of the calcareous matter of the soil, is neutralized. By being thrown into a litter-pen the same effect is produced.

Marsh-mud.—This is not a manure of nourishment, where marsh itself is not combined with it. The evidence on this head is conclusive, as it does not but very slightly increase the growth of the cotton plant. From the analysis of Professor Shepard, it seems to contain more valuble properties of a permanently beneficial kind than any other natural compound. The great disparity between I and K, and the other analyzed specimens, in regard to the water of absorption, to organic matter and alumina, shows, that by marsh-mud, judiciously gathered and applied, the amending of our lands, though the operation will unquestionably be gradual, may confidently be relied upon. The differences of opinion as to the utility of this manure, arises solely from the difference in the component parts of the substance itself. Frequently, in the immediate neighborhood of each other, samples

* Priestley first, and Lavoisier after him, analyzed air, and found that when pure, it consisted of about seventy parts of azote, twenty-seven of oxygen, and two of carbonic acid. In its ordinary (or impure) state, it is loaded with foreign and light bodies, such as mineral, animal and vegetable vapors, the seeds of plants and the eggs of insects. It is to this *aggregate* that vegetation owes the services rendered to it by air.

† Carbonic acid is formed and given out during the process of fermentation, and makes twenty-eight parts of one hundred of atmospheric air. It is composed, (according to Davy,) of oxygen and carbon, in the proportion of thirty-four of the former to thirteen of the latter.

are drawn wholly dissimilar in many essential respects. I and K were taken from the same bed, and only a few feet apart, yet one has ingredients of which the other is entirely deficient. As it is important to add to its highly useful and efficacious powers the desirable quality of contributing directly to nourish the cotton plant, the surface of the mud-bank only, containing as it does much vegetable matter, should be dug. The more tenacious the quality, known by its strongly adhering to the hoe, the better, if its mechanical effects are wanted; the lighter, when dry, the greater is the quantity of vegetable aliment of which it is composed. It is for this reason that turf-mud is as highly (if not more) esteemed, as any other description, except that perhaps in which comminuted shells are found. Dry mud, although by exposure it will lose its carbonic acid, which, however, is in general very inconsiderable, has been experimentally proved to be decidedly more useful than when wet or newly taken up. In the latter state, it is incapable of intermixing with the soil. If the fertility of earths depends on the fineness of their particles, the favorite theory of the celebrated Tull, a mass of hard matter, though it be alluvium, cannot contribute materially to the fructification of plants. Of a very dry season, wet mud is known to be valuable. This arises from its saline ingredient, which keeps it always moist.

It may here be appropriately observed, that if the rotation system be a judicious means of improving lands for cotton, the alternation of manures is equally advisable in increasing the product of the crop. The change from mechanical and stimulating to manures of nourishment, has given the most favorable results. There is no doubt that, after perhaps the first year, when a cart-load of mud to the task-row is necessary, one-half of that quantity will produce all the effects which would be expected from the use of a larger amount. Although it may not be true with regard to other manures, yet it is undeniable, that lands seem to tire of marsh-mud after three or four *consecutive* applications. This probably arises from the soil possessing, at the end of that time, a sufficient portion of all the nutritive properties, which, as far as this substance is concerned, are essential to the procreative powers of the cotton plant. The addition of more mud is consequently not only unavailing, but perhaps from its very excess operates disadvantageously. The generating cause of the "blue disease" in cotton is unknown. The remedy fortunately is no longer one of the arcana of nature. Plantations, which at one time bid fair to impoverish their owners, are now, by the free use of mud, among the most profitable. The individual who first in practice developed the fertilizing properties of this inexhaustible compound, is entitled to all the honors which are due to benefactors of their country.

Salt.—Sir John Sinclair, in his treatise on this subject, says, "salt employed in large quantities, in its natural state, is hostile to vegetation, yet it operates advantageously in various ways when judiciously applied to arable lands. In large quantities it has a tendency, like every other excessive stimulant, to disorganize and destroy the vegetable substances with which it comes in contact; but in moderate quantities, it promotes the growth of vegetables." Author Young observes, "that the application of sea-water to vegetables generates putrescent hepatic gas, caused by the mixture of vegetable juices with the vitriolic neutral salts contained in sea-water. Muriate of magnesia, forms one-fourth of the saline matter of sea-water. Very considerable benefit has been experienced from its use in promoting vegetation, when mixed with dung or compost dung-hills. It possesses a septic power that promotes putrefaction." The Chinese make use of sea-water as manure near their coasts. In the interior they scatter salt over their fields before they are tilled. The same practice is pursued in Hindostan and by the Milanese. From the time of Lord Bacon, sea-sand, the principal value of which lies in the salt with which it is impregnated, has been extensively used, where obtainable, in nearly all the countries of Europe. In 1819, it was given in evidence before a committee of the house of commons, that there is always a violent strife among the farmers of Cornwall for the largest share, whenever the refuse salt, used in curing fish, is for sale. The money laid out in Cornwall, and the adjoining counties, for sea-sand, amounted, one hundred and ten years ago, to £32,000: and so much has the practice increased, says an English writer of 1820, that the expense of land carriage for sand, used as a manure in Cornwall alone, now amounts at least to £30,000 annually. All the authorities to which the committee have had access, unite in the following testimony.

1. In small quantities salt has septic properties; in large quantities it is an antiseptic, or counteracts putrefaction.

2. Attracts and retains moisture.

3. In relation to corn, Irish potatoes, barley, hemp, flax, and many other crops, its beneficial influence is beyond dispute. For grass lands, especially in dry and hot summers, no application is represented to be better. It is a preventive to the blight and mildew in wheat, and effectually destroys all noxious weeds, grubs, worms and insects. As salt is a stimulant, it should of course be mixed with animal or vegetable substances, and never used alone. It is known to the committee, that if incorporated with the compost heap, or the organic matter buried with the sward, it will not only increase the productive power of cotton, but preserve its health and bring it early to maturity. The quantity successfully tried on this island, has varied from one pint of clean Liverpool salt to a quart, to the row, on the listing, or from two and a half to five bushels to the acre. A larger amount, checks the growth of cotton, and hence operates injuriously on poor soils. For grass-lands, six bushels of foul salt to the acre are recommended; and as one of the means of preparing grounds for the usual crops in northern countries, sixteen bushels per acre, it appears, ought to be used. When mixed with ashes, lime or soot, its meliorating power is greatly increased.

Animal manure.—The following analysis, by Kirwan, is worthy of especial notice:

		Charcoal.	Lime.	Clay.	Sand.	Fixed Salts.	Carb. Hyd., Carb. Acid and Water.
105 lbs. of Cow-dung,	give	3.75	1.20	0.15	2.4	0.6	92.80
" " Horse "	give	10.02	1.50	0.50	3.0	0.21	89.77
" " Sheep "	give	25.00	10.28	29 00	29.0	0.72	68.00

The vast superiority of the last is very manifest. Let not this, however, mislead the judgment of the planter. The ordure of sheep, maugre its intrinsic value, is the most costly manure, when the food that animal consumes is considered, that is now used.

The English practice of strewing animal manure on vegetable substances is not pursued, it is believed, in our southern country. With us the universal method is, where a sufficient amount of vegetable matter has been brought together, to inclose the stock at nights on the heap, until it has been reduced to a proper consistency, through the process of fermentation. This brings the committee to the consideration of the manner of making composts, and the materials of which they should consist.

Composts.—On this subject four important considerations present themselves.—1. The selection of a suitable site. 2. The use of retentive absorbents. 3. The collecting and adding together such materials as contain the greatest quantity of nutriment. 4. The preventing of waste. The site should be level ground, in the immediate vicinity of a bed of clay. Around it let an embankment be thrown up, with the ditch facing outwards.

In our sandy lands decomposition is rapid. Whilst the volatile portions of vegetable substances are perpetually escaping in the form of vapor, the earthy parts sink and are lost in the soil. By this means we ignorantly yield, perhaps, one-third of the treasure, which our unwearied efforts had been instrumental in gathering. To avoid this long practised error, the use of retentive absorbents, such as common clay and pine trash, are strongly recommended.

The following plan of increasing the quantity and improving the quality of manures, the sole object of composts, is considered judicious and proper:

1. Six or eight inches of common clay with as many bushels of foul salt intermixed.
2. A layer of pine trash with salt.
3. Animal dung. Keeping stocks on the mass for four or five weeks will subserve the purpose aimed at.
4. Vegetable and other matter, such as fennel and weeds on the edges of ditches and fences, thistles, oat-straw, corn-cobs, ashes,* soot,† corn-stalks, broom-grass, scrapings of yards, where there is no joint or nut-grass, pond-mud, and, in general, all the filth and rubbish of a plantation.
5. A few bushels of salt.

Upon these variant materials, let the cattle be nightly penned, until decomposition is carried sufficiently far—then cover the whole with clay. Whilst the clay and pine trash at the bottom, each aided by the influence of salt, will imbibe and hold the salts of the urine and other substances, which are usually lost, the surface clay will arrest and retain the gaseous effluvia, constituting as they do one-half, and perhaps the more beneficial one of the entire bulk. By this mode too, dead matter is converted into mould. The surface clay will not only be impregnated with the enriching properties of the evaporating particles of the mass, but, if exposed a sufficient length of time, will be rendered still more valuable by the fertilizing action of the atmosphere itself. In proof of this, setting aside theoretical principles and the usage on our northern farms, where the subject of composts is well understood, it is with us a matter of annual notice, that clay from the bottom of ditches, several feet below the soil, if thrown on the surface, will, the first season, produce a better crop than the contiguous sandy parts. That some of the beneficial effects thus witnessed are ascribable to mechanical agency, is doubtless true. Hence, in this respect, common clay, which is nearly free from silicious earth, is far more efficacious in its operation than marsh-mud, which has only a small portion of alumina. Our composts contain in general only two ingredients—animal dung and pine-trash; sometimes rushes or marsh is added, and occasionally mud. The reason assigned is, that the supply of pine-trash is abundant. There are nevertheless solid objections to the too liberal use of this substance. In the first place, it is the nursery bed of insects, which are so tenacious of life, that to destroy them the putrefactive process must be carried to a point beyond what prudence would advise. Again, pine-trash possesses a large proportion of inert matter, which is scarcely soluble. It is, perhaps, for this reason, that it is decidedly inferior to marsh, rushes, corn-stalks, &c. Exclusive of these important suggestions, it is well ascertained, that the value of composts depends on the variety of their materials, or a proper admixture of animal manure with vegetables, containing the largest amount of geine. This is a proof of a very decided character that, as a general rule, for there are exceptions, a compound is better than any one of the elements that compose it.

Of all the substances profitable as manure, perhaps corn-stalks occupy the front rank. To scientific researches are we indebted for the knowledge of this useful truth. 1000 parts, says Davy, gave 84 parts of ashes; and 1000 parts of those ashes afforded 72.56 of soluble matter. It is known that, after the shocks and outer covering have been eaten by the cattle, the stalks are allowed to rot and give their virtue to the air. Using this plant, therefore, as manure, by burying it in the fall, or throwing it into the compost heap, is not robbing the soil on which it grew, unless the roots are taken, which of course should never be done. Here then is a source from which an abundant supply of the best aliment may be drawn.

Among the ends to be answered by the position of the larger part of the salt, the annihilation of the vermin with which, as already remarked, pine-trash abounds, is one of the most important.

It is not advised, though pounded shells thrown upon the pine-trash would have a happy tendency, that lime be added to the compost heap; because all the advantages to be realized from such a measure, are attainable by spreading the calcareous earth on the land, where it is most needed.

The mixed compost, thus briefly considered, recommends itself for its economy, variety of ingredients and facility of construction; for being composed of highly nutritious as well as stimu-

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* A bushel of ashes, says Dr. Dana, is equal to a cask of lime.

† In 100 parts of soot there are, besides other ingredients of value,

30.70 of geine.
5.00 of sulphate of lime.
1.50 of phosphate of lime and iron.
3.85 of carbon.—*Dr. Dana.*

lating and mechanical matter—and, as affording in relation to one of its conspicuous component parts, the means of profit, from which the cotton plant could before derive no assistance.

Lime.—As preliminary to their comments on this head, the committee would invite the attention of the society to Edmund Ruffin's interesting and instructive essay on calcareous manures. No treatise on any agricultural subject, emanating from the American press, has effected such valuable results, not only in this country but in Europe. In regard to Virginia, it has literally converted an abandoned soil into fruitful and luxuriant fields.

Lime is never found naturally in a pure state. It occupies a middle region between sand and clay. It benefits the former by rendering it more firm and adhesive, and the latter by making it less so. Deprived of its water and carbonic acid by fire,* it is called quick lime. Combined with carbonic acid in common limestone, the shells of marine animals, &c., it is known as mild lime, or the carbonate of lime. With a friable mixture of clay, it receives the appellation of marl.† The sulphate of lime (gypsum or plaster of Paris) is composed of sulphur and oxygen, and the phosphate‡ of lime, is the basis of bone manure. Whilst lime (caustic or quick lime) is a powerful promoter of putrefaction, its carbonate (mild lime) retards that process. The former is only used where there is an excess of organic matter. It recombines so quickly with carbonic acid, if exposed to the atmosphere, that, where its solvent powers are needed, it should be applied as soon after it is slacked as possible. Mild lime, in the form of ground or powdered shells, by preventing the too rapid decomposition of vegetable substances, performs a highly useful function. For this reason, no sudden increase of fertility is to be expected from calcareous manures. When it is considered that, in our hot climate, the putrefactive process is readily brought about, and that our lands, from their light and porous nature, are too favorable to the escape of the volatile parts given out by fermentation, any substance that, whilst it attracts moisture, will yield food only to the growing plant; that will combine with and fix manures in the soil; (sand has no power in holding vegetable and animal manures,) that will impregnate the earth with aliment drawn from the atmosphere; that will hasten the ripening of the crop, and that will neutralize acids, possesses properties of rare value to the planter. Such a substance is mild lime.

All soils destitute of calcareous matter have acid properties; and, on the high authority of Mr. Ruffin, such soils possess the power of reducing to powder the comminuted shells, which by the plough or otherwise may be mixed with them. The quantity of mild lime used to the acre is from fifty to three hundred bushels—to be renewed in ten or fifteen years. The best shells, whether oyster, clam, or muscle, are those from which the living principle has recently been taken. Such are infinitely to be preferred to the calcareous beds, which on the edges of our rivers have been bleaching perhaps for a century. The first contains mud and animal matter, and is otherwise richer in its saline ingredients. If no other efforts be made by the planter in this business, than to burn and use as a manure the oyster shells which the industry of his negroes may have thrown about their dwellings, he will confer on them, as far as their health is concerned, and on his lands, especially where broom-grass is wont to grow, a benefit of incalculable magnitude.

Mr. Ruffin, as a prudent admonition to those who may be disposed to try the virtues of calcareous manures, says, "its benefits must necessarily be gradual, never quickly perceptible, nor can it be expected at all, unless on soils under meliorating culture, which will allow more to return to the earth than is taken off." In confirmation of this opinion, he gives the result of twelve years' trial of liming very poor land sown in wheat. The first three years, the average product was five bushels and one-third; the next three—eight bushels, and the last three, ten bushels and a half; thus doubling his crop mainly (the land rested two years in four, and was not grazed,) from a single though heavy dressing of mild lime.

The committee cannot conclude their report without submitting a few reflections suggested by Professor Shepard's communication. To chemical science alone are we indebted for the information it imparts. From no other source could light have been shed upon a matter so replete with interest to the owner of sea-island lands. "Agricultural chemistry," said Sir Humphrey Davy, "has for its objects all those changes in the arrangements of matter connected with the growth and nourishment of plants; the comparative values of their produce as food; the constitution of soils; the manner in which lands are enriched by manure or rendered fertile by the different processes of cultivation. Inquiries of such a nature cannot but be interesting and important, both to the theoretical agriculturist and to the practical farmer. To the first, they are necessary in supplying most of the fundamental principles on which the theory of the art depends. To the second, they are useful in affording simple and easy experiments for directing his labors, and for enabling him to pursue a certain and systematic plan of improvement." "Man," he elsewhere beautifully remarks, "must consider the vegetable kingdom, not as a secure and unalterable inheritance, spontaneously providing for his wants, but as a doubtful and insecure possession, to be preserved only by labor and extended and perfected by ingenuity." An acquaintance with the funda-

* The heat that is evolved in the process of slacking lime, is the caloric of the water, (for which it possesses so strong an affinity, that it will absorb one-fourth of its weight of that fluid, and yet remain perfectly dry,) as it passes to its solid state, and does not proceed from the lime as is sometimes supposed. —*Parkes.*

† "Pure marl, when dry, is almost as white as chalk, and much lighter than common soil. When wet, it is of a light gray color, especially if it contain much organic matter. When wet, it is plastic and adhesive; when dry, it falls into a fine powder. Found almost exclusively in swampy ground, generally in quite wet swamps, and is always covered by a stratum, often several feet thick, of black vegetable matter approaching to peat. It resembles white clay and sand. To find it make use of a pole—some will adhere."—*H. Colman, Commissioner for the Agricultural Survey of Massachusetts.*

‡ Cotton gives 1 per cent. ashes, of which 17 per cent. is composed of phosphate of lime and magnesia. —*Dr. Dana.*

mental laws which regulate the operations of husbandry are as necessary to the agriculturist, as a scientific knowledge of the human system and of materia medica is to the followers of the healing art. The empiric who indiscriminately prescribes one or two favorite nostrums, merits the contempt of every man who values human life. Yet, the husbandman, who enters the temple of science, the better to qualify him for the proper discharge of his multifarious and complicated duties, is viewed as a mid-day dreamer, who seeks for that, which, if acquired, would only unfit him for his pursuit, by diverting his attention to objects of uncertain and subordinate interest. Although we are justly told by one of the profoundest philosophers* of any age, that when theoretical knowledge and practical skill are happily combined in the same person, the intellectual power of man appears in its full perfection, and fits him equally to conduct with a masterly hand the details of ordinary business, and to contend successfully with the untried difficulties of new and perplexing situations—still, it is deeply humiliating to declare, that in the sober judgment of perhaps every agricultural community, theory and practice are antagonistic;—they cannot successfully be united in the same individual. If the vegetable world possesses a living principle—if every species has a regular organization, which requires for its support an incessant supply of food—if each plant has its period of growth, health, disease, decay, and death, is it not certain, that the laws which govern vegetables are fixed and immutable? If so, is an acquaintance with those laws unimportant, especially to him whose province it is to aid nature in replenishing the earth with food? What information can mere observation impart to the farmer concerning the composition of his soils and manures? He knows that a particular plant will not thrive upon a certain soil. But why? No answer is heard. He scouts the belief, that the man of science, whose book, it may be, is his sole guide, and who perhaps has never been beyond the purlieus of his city abode, can instruct him in his vocation, and by so doing greatly promote his temporal welfare. Yet the fact is indisputable. A portion of the farm of Sir Joseph Banks was sterile. All his exertions to raise one of the numerous crops usually cultivated, failed. A specimen of the soil was put into the hands of a chemist of London, who readily detected the sulphate of iron. The remedy, carbonate of lime, was applied—and the enemy that had so long baffled the well directed efforts of this distinguished nobleman and agriculturist, ceased longer to assail him.

All which is respectfully submitted by

WHITEMARSH B. SEABROOK,
WILLIAM M. MURRAY,
G. W. WESTCOAT, *Committee.*

Edisto Island, July 13th, 1840.

CORRESPONDENCE BETWEEN THE AGRICULTURAL SOCIETY OF ST. JOHN'S, COLLETON, S. C., AND THE EDITOR.

To the Editor of the Farmers' Register.

Edisto Island, August 26th, 1840.

At a late meeting of the "Agricultural Society of St. John's, Colleton," the following resolution was adopted:

"*Resolved*, That the corresponding secretary be directed to address a letter to Mr. Ruffin, Editor of the Farmers' Register, respectfully asking whether, if he be the cultivator of cotton, he uses lime as a manure; whether the beneficial effects are seen the first season; whether quick or mild lime is preferred, and the quantity of each necessary to an acre. Whether used alone, or with compost; and, in fine, that he furnish, if not incompatible with his other duties, all the information in relation to calcareous matter, as a manure for cotton, which it may be important to communicate."

The attention of the planters of this island has been called to the consideration of the subject embraced in the above resolution, from the fact, that whilst they have succeeded, by the liberal use of enriching manures, in maintaining the original strength of their lands, they would appear to have failed in preserving in them that principle which is peculiarly adapted to the production of cotton, if we are to judge from the diminished results of each year's labors. Prof. Shepard, in his analysis of the soils of this island, is inclined to the opinion, that the "peculiar fertility of the new sea-island cotton land may be owing to the proportion of comminuted shells, natural to such soils, and the deterioration of these lands under long cultivation, ascribable to the exhaustion of carbonate of lime." If you can communicate to us any information in relation to this subject, I scarce need assure you that it will be thankfully received.

With sentiments of high respect and esteem, I remain yours, &c.

J. JENKINS MIKELL,
Corres. Sec.

REPLY.

SIR—In answer to the inquiries which the Agricultural Society of St. John's, Colleton, have recently honored me by making, I can offer almost nothing of such particular facts and accurate results of comparative experiments, in regard to lime on cotton, as seem to be called for by the resolution of the society. At a former time I cultivated cotton, and on a large scale, for so northern a latitude (37° 17′) and for five years in succession. Still, the culture, as a field crop, was a novelty in this region, and, to me especially, a matter of experiment, which, after sufficient trial, was abandoned by me, as too little suited to our climate, and still less to good and improving farming. Before I began to cultivate cotton, nearly all my open land had been made calcareous, by marling; and as the best land of the farm was devoted to cotton, it followed that of all the land cultivated in that crop (varying from 48 to 96 acres yearly,) there was no part which had not been marled. Of course there were no means offered of comparing the results with those of similar land without marl. But I did not deem this deficiency important to myself, inasmuch as I entertained no doubt whatever of the advantage of calcareous manure to the increase of product of cotton being as great as to that of other crops, which had been more carefully observed. There was another advantage peculiar to cotton, which I was as well convinced of my receiving the benefit of, but which

* Stewart.

a'so, for the reason above stated, wanted the confirmation of any accurate comparative experiment. This was the general operation of calcareous manures to forward the ripening of all crops; and this effect on cotton is especially valuable in our climate, though not in your warmer region. In the five years during which I planted cotton extensively, there was no material diminution of the quantity of any crop, caused by the frost destroying unripe pods; and in only one of the years, according to my present recollection, was there any notable, or noticed, portion of the last gathered cotton, injured in quality by being made yellow, by the severity of frost on the green pods; which is a very common evil in the cotton crops here, on lands not calcareous. As to general product, my richest lot of 25 acres, produced more than 1000 pounds of seed-cotton (short staple, of course,) to the acre. Two acres, separately and accurately measured, produced 1300 lbs. to the acre. These were the weights as brought from the field, and by weighing the day's work of each hand at night. Of course, the subsequent drying would have reduced these weights. The above products were on very good soil, slightly calcareous naturally, and made more so by marling. On another field, naturally poor and acid, but improved by marling, to the product of 30 bushels of corn to the acre, the first and best product of cotton (weighed as gathered) was barely 600 lbs., and which soon fell to 300 and less to the acre in subsequent cultivations. It may be proper to state that cotton cultivation was continued on the same land several years in succession, as long as the crop was raised on the farm.

My applications of calcareous manures were confined to shell-marl; consequently, the lime was always in the mild, or carbonated state. Between quick-lime and any of the forms of carbonate of lime, my choice would be directed solely by the consideration of the greater cheapness in application of the one or the other. Deeming, however, that the caustic quality of burnt lime is rarely if ever desirable in the soil, I would prefer such mode of treating quick-lime, whether of shells or stone, as would most facilitate its becoming carbonated, before being applied to the soil, or as soon after, and effectually, as possible. In the admitted absence of any experimental knowledge of my own on this head, and therefore relying on the opinions of others, I would especially recommend to the cotton planters of Edisto, the practice of the late Fielding Lewis of Virginia, (which is general on the liming farms of James River,) in regard to shell-lime, applied alone, and to the directions of M. Puvis, in his valuable 'Essay on Lime,' for making composts of lime and rich vegetable-soil. The first of these articles is in the first volume of Farmers' Register, and the translation of M. Puvis' work in the third volume, both of which were formerly furnished to your society, and I presume remain in its library. Where marsh grass and mud are so extensively used for manure, as on your coast, I should suppose that the making of compost heaps of those alimentary manures with quick-lime, would greatly add to the separate values of all the different materials.

Knowing so little as I do of the soil and agriculture of the sea-islands of South Carolina, I am well aware that any opinions of mine bearing on their particular qualities or defects, must be of very little worth. But with this general admission, and notwithstanding my very high opinion of the value of calcareous manures, I must beg leave to dissent from the opinion of Professor Shepard, which you quote. That the natural proportion of comminuted shells in these soils was the source of their original and long enduring fertility, I fully believe; and, as much, that the artificial addition of calcareous matter, where but a trace remains, and still more where no *carbonate of lime* is now found, would be highly advantageous. But the disappearance of the *carbonate of lime* in these soils, (as found by the analyses of Professor Shepard,) does not, in my opinion, indicate the removal of what formerly existed there, at least in any great degree; but rather, by its being acted on by the acid of the soil, its change from the *carbonate* to some other salt of lime. The general reasons for this opinion have been given at length in the chapter on the "Proofs of the existence of acid and neutral soils," in the 'Essay on Calcareous Manures.' And the new form in which the lime remains, seems to be no less beneficial as a fertilizer, and fixer and retainer of other fertilizing matters, than its original form of carbonate of lime.

It is true that there are two natural modes of operation by which carbonate of lime in soil may be continually abstracted or removed, though in very small amounts. All growing plants take up some lime from the soil in which they stand, and though the quantity is usually very minute, still that small quantity is absolutely necessary to the healthy existence and perfection of every plant. And, in this belief, I thence infer, that every soil, capable of producing any vegetable cover, must contain some trace of lime in *some* state of combination, (though almost no natural soils in the Atlantic states contain the smallest portion of the carbonate of lime;) and that without some minute portion of lime, every soil would be entirely barren and naked. In short, that it is simply and solely the presence of lime, and the operation of this lime in combining with, and fixing alimentary matters, that serve to form what we term *soil*, which, whether rich or poor, is always strongly contrasted with the entirely barren sub-soil below.

But though the crops grown on the soil, and especially when annually and generally carried off, must take away a part of the lime of the soil, the quantity is so small, that a century would scarcely show a sensible diminution. And if a manuring system were kept up, as is the case with your cotton-lands, the probability is, that the vegetable manure applied would contain and restore to the soil fully as much as was taken off in the crops. Indeed, if, as I suppose, the cotton fibre alone be removed from the sea-island fields, there would be very little loss of lime to the land, the fibre being almost entirely composed of carbon.

Another source of loss of carbonate of lime to soil is by its solution in rain-water, and being thus carried away in torrents, or descending to form springs. Carbonate of lime is insoluble in water alone, and therefore would be subject to no such cause of waste. But rain-water has dissolved in it a small proportion of carbonic acid, and so far is made a solvent of carbonate of lime. It is by the percolation of rain-water that all limestone waters are formed; and as soon as they lose

their excess of carbonic acid, (which is very easily effected,) the carbonate of lime held in solution is dropped. It is by this process, slow and small in each particular effect as it is, that the solid limestone foundations of mountainous regions, are hollowed out into immense caverns, and that all the streams are saturated with dissolved carbonate of lime. And the waste and removal of this substance (which goes to fertilize other lands) must be enormous, where there exists so much carbonate of lime, in excess beyond all the wants of the soil and its vegetable products. But where there is no such excess, I believe that the attraction of the soil for the lime is stronger than the solvent power of rain-water, and that none is so lost, unless the soil in a mass be washed away. And with so level a surface, and sandy and open soil and sub-soil, as the sea-islands have, if there could be any carbonate of lime so dissolved, it could not flow off in the water, but would merely sink into the sand, and thus serve to deepen the fertile portion of the soil.

Feeling a strong and general interest in the agricultural improvement of South Carolina, and especially by the means of the calcareous manures with which the country has been so bountifully supplied by nature, and which are as yet almost entirely overlooked and neglected, I should rejoice to aid the excellent objects of your society to promote that best of all possible modes of fertilization. It is therefore the more regretted by me, that, in regard to all the information on particular points required of me, my reply should be necessarily of so little worth. On the subject generally, perhaps my opinions might be of more value. I therefore beg leave to present twenty copies of my general work on this subject, the 'Essay on Calcareous Manures,' through you to the Agricultural Society of St. John's, Colleton; and earnestly hope that this and all other existing sources of information, on that important subject, may be permitted to operate fully for the improvement and profit of South Carolina.

Respectfully,

EDMUND RUFFIN.

To J. JENKINS MIKELL, ESQ.
Cor. Sec. Agr. Soc. of St. John's, Colleton, S. C.

THE BURNING MOUNTAIN.

From the Lehigh (Pa) Bulletin.

Mt. Vesuvius, Schuylkill Co., May 31.

Mr. Editor:—I this morning paid a visit to this place, situated about 4 miles N. E. of Minersville, and by road 8 miles from Pottsville, to see the wonderful effects of a coal mine on fire. Arriving at the foot of the mountain, by the lateral railroad I approached the mouth of the mine, from which there issued considerable water, which, to the taste, is highly charged with sulphur, and some iron corroded from the rails, laid in the gangway of the mine, and depositing a sediment approaching near the color of chromic yellow.

It was at this opening the fire took place in January, 1838, caused by the miners having made a fire in the mouth of it, to keep the waters from freezing about the rails, so that they could commence their operations early in the spring, which, through carelessness, ignited the propping of the gangway, and from which it communicated to the coal dirt, before it was discovered. The miners then endeavored to extinguish it, but it was beyond their power, and after having worked at it two nights and a day, they left it in despair of stopping its ravages, and which it is now impossible to stop.

Going from thence up the mountain, (which faces the south) about 150 yards, I arrived at the first crater, which is in the shape of an inverted eliptical cone, about 40 by 70 feet diameter, and sunk some 15 feet below the surface, in the centre of which, the coal vein or mine is on fire, smouldering, as it were, with dirt and stones which have caved in upon it; the stones are burnt to appearance like lime. The smell of sulphur here is highly perceptible; from the north end of this crater, there issues a rumbling noise like distant thunder and the heat appears to be intense. About 30 feet higher up the mountain, I arrived at another crater, perhaps 30 feet in diameter, which is a chasm apparently about 30 feet deep, with much smoke issuing from the connexion with the first crater on its south; the west side of this chasm is a mass of immense stone, with fire under it as far as the opening exists; the rumbling noise before mentioned is here more distinct than at the first crater, and the heat greater, both caused, perhaps, by the wind being from the south. The smoke and sulphur on the east side was very annoying to me, and caused me to shift my situation to the west side, passing, for the purpose, between the first and second crater, over a strip of ground about 30 feet wide; knowing it to be undermined by fire, and then in full blast, caused me to tread lightly, (such is the effect of habit,) for fear of breaking it down, which had I done, I should have been engulfed in a horrible death.

Further up the mountain, some 50 feet apart, are three more craters, similar to the first in size, but there is no rumbling issued from either of them. There have been others of similar size, which are now filled up, except one which is not more than four feet in diameter, from which issues steam.

Upon reaching the extremity of the fire, as far as discernible, I had a fair view of the damages done upon the surface of the hill. For perhaps 50 to 60 acres, all vegetation has been destroyed, and the herbage and sprouts are quite red, which have a pretty effect at a distance, but upon the spot the appearance is desolate, not a blade of grass nor a green leaf or twig meets the eye, as far as the influence under ground has acted.

On my return to New Castle, which is at the west foot of the mountain, I was informed that the mine belonged to Messrs. Dundass, Richards & Co., of Philadelphia, and that the coal vein would average 40 feet in thickness. Here is material enough in the mountain to burn some years. It is now proposed to open the vein at the other end of the mountain, and save as much coal in that way as possible.

CABBAGE PLANTS.

From the Maine Cultivator.

A *sure*—but rather troublesome—protection of cabbage plants against the grub worm, is to go out into the woods and take off lots of strips of birch bark from small trees. These will naturally main-

tain the shape they sustained on the tree—round like a wafer box, without top or bottom. They should be about two inches high or deep. Let each strip enclose a plant, and press it gently into the earth. The grub can then neither crawl under nor climb over it. Look he ever so wistfully that way, he cannot set his teeth into the delicious fibres of the young cabbage stalk.

LIQUORICE.

From the Penny Magazine.

This plant, which requires a deep loamy sand, with a bottom of clay at the depth of three or four feet, is chiefly grown at Pontefract in Yorkshire. The properties for which the liquorice is cultivated are found in the root, which contains an abundance of mucilaginous juice, of a sweet and sub-acrid taste. The pectoral qualities of this juice are well known, and the Pontefract cakes, which are a preparation from the liquorice root, are in considerable demand, both in England and on the continent. These cakes are not so large as a shilling, and bear the impress of a castle. Liquorice is also a chief ingredient in lozenges and other medicaments taken for coughs. The liquorice plant being a native of the warmer climate of southern Europe, is not always a profitable crop in this country. Great care and good management are absolutely essential, and the land must be of superior quality, well manured, and stocked with choice plants, or the cultivator will not succeed in bringing them to perfection. A wet and cold summer is injurious, and an unfavorable season will produce only one fourth of an ordinary crop. The mode of cultivation in the liquorice-grounds at Pontefract is first to trench to the depth of three spades, the bottom to be loosened but not thrown out. Old stable-dung must then be spread on the land, in the proportion of from thirty to forty cart-loads per acre; and it must afterwards be well dug in. The land is then laid out in beds about thirty-eight inches in width, thrown up about a foot in height, and after being neatly raked over it is ready to receive the plants, which should be put into the ground in March or April. They are of two kinds, stock and runner-buds, and are dibbled in four inches deep in alternate rows across the ridge, one on the top, and one on each side, and longitudinally at the distance of six or seven inches. The beds are then carefully raked, the dibble holes being well covered in. The space between each row of plants is usually sown with early dwarf or York cabbages, or early kidney potatoes. The beds will soon require weeding, and this is done two or three times during the summer. In autumn the top, which is four or five feet high, is cut off near the bud. In the ensuing spring and summer the ground must be hoed and carefully weeded, and in autumn the tops, which are four or five feet in height, are cut down as before. The same management must be repeated each year, for the part of the plant above the surface grows annually, though the root is perennial.

About the third or fourth year after planting, the roots, which should be three or four feet long, are taken up some time between November and February. They are tied in bundles for sale, which is effected as early as possible, as they become dry, and of less value the longer they are kept.

IMPROVING LAND BY GREEN CROPS.

From the Farmers' Advocate.

Philadelphia, 3rd month 18th, 1840.

Dear Friend.—Soon after our return, I applied to a friend who has the reputation of being a skilful agriculturist, for his advice as relates to the best method of proceeding under your circumstances—his reply is now before me, and I know no better plan than to copy his letter; he says—

"My farm having been in a high state of improvement for many years past, I have not done any thing in the way of improving land by green manures, having a full supply from my barn-yard for all my wants; I can however say, when the latter cannot be had to sufficient extent, and where lime or marl is not to be obtained but at too great a cost. I would look as my chief dependence, to green crops, and from the experience I have had, would give a preference to corn for that purpose, sown broad-cast, say 1½ to 2 bushels to the acre, not only on account of the greater quantity of saccharine matter contained in the corn stalks, but also on account of the greater produce to the acre, and the facility of covering it with the plough. I have, myself, made but one experiment with green manure *alone*, being generally in the practice of liming previous to sowing the grain,—in that instance I pursued the following course: about the 15th of the 5th month, after corn planting. I prepared the ground, and sowed 1½ bushels of corn per acre, harrowed it in lengthwise—then across; the grain was well covered, I should however prefer covering with the plough *lightly*, when it can be done, and harrowed once to level the ground; as there was no rain for several weeks, sufficient to cause the grain to vegetate, not more than about one third came up, in consequence I considered it pretty much of a failure; what there was I had ploughed in when in tassel, as deep as I could, having first rolled it down with a heavy roller; after ploughing it in, it was again rolled, and so left until seeding time, when the wheat was sown broadcast and harrowed in; the land in this case was poor, yet a good crop of wheat was cut from it.

I have known several experiments made in my neighborhood, similar to the above, and always with good success. I will mention one case directly to the point: a near relation of mine had some poor land on his farm, that he said he could do nothing with, it was a light sandy soil; I proposed to him to fence off about five acres, and try the experiment of improving it by green manure alone; he laughed at the idea, but at my particular request submitted; the result was as follows: the first seed sown was oats, which grew to the height of 3 inches on an average; these were ploughed in, and again sowed in oats; this crop was about double; the 2nd year, again sowed oats in the spring—crop pretty good,—ploughed it in and sowed buckwheat, produced a fine crop which he cut; then ploughed the ground—sowed with wheat and cut a fine crop.—My wish was, that he should have continued the experiment for 5 years without cropping, but the improvement was so great, that the temptation to crop could not be resisted beyond the 2 years. I am decidedly of the opinion that poor ground can be made good by green manure only—but to do this the cropping must be *light*, until assisted by manure made from the grasses produced—I would prefer the

Dutton or northern corn for sowing, as it suckers more than any other, and ripens earlier—of course would admit of its being ploughed in sooner, which would give it more time to decompose."

The foregoing quotation gives the recommendation of my friend, which I am fully prepared to subscribe to. I may now say that I feel a lively interest for the promoting of the pecuniary advancement of my friends in North Carolina, as I am very much inclined to believe that important consequences are dependent thereon.

JOHN ELLIOT.

EXPLOSIONS IN COAL MINES.

Extract from the Edinburgh Encyclopædia.

To describe the catastrophe attending an explosion of an extensive coal-mine, would require the pen of an able writer, guided by one who has been present at such a scene; but some faint idea may be formed from the following description. We shall suppose a mine of great depth, perhaps from 100 to 150 fathoms, with the workings extended to a great distance, the machinery complete in all its parts, the mining operations under a regular and rigid discipline, with railways in every direction; the stoppings, passing doors, brattices, and the whole economy of the mine so arranged, that every part of the work is performed like a well regulated machine. To see a mine of this extent at full work is a scene of spirited animation, and of wonderful industry; the "sound of the hammer" is heard in every quarter, and the numerous carriages, loaded and unloaded, passing to and from the wall-faces to the pit-bottom are seen driving and thundering along in every direction. At each door, a little boy, named a a trapper, is placed to open and shut it. Every one is at his post; added to which, there is a degree of cheerfulness pervading the whole scene, which could scarcely be expected in a place of so sombre an aspect. While the work is thus going forward, it has but too frequently happened, that, from some unforeseen cause, part of the ventilation has become stagnant, or laid dead, as it is termed, by which a great body of inflammable air is gathered into one place, or the sudden opening of a blower has produced the same effect, the certain consequence of which is, that the unsuspecting miner enters it with his candle; ignition takes place; "sudden as the spark from smitten steel," the whole extent of the mine in that direction becomes one blaze of light and flame from roof to pavement, in which the miners are enveloped. It hangs for a few seconds; then from the evolution of immense volumes of gases, with much heat, this pestilence begins to move with the violence of a tornado, and with the noise of thunder, directing its course always in the nearest direction to the upcast shaft. Its power is awful and irresistible. Whatever obstructs its course is swept onward like smoke before the wind. The stoppings are burst, the doors are shivered to a thousand pieces; while the unfortunate miners and boys who are within its range, with the horses, carriages, corves, and coals, are swept along with inconceivable velocity; and when a pillar obstructs the direct course of the current, they are dashed against it, and there lie mingled in one common mass of ruin, desolation and death, as if they had been blown from an immense mortar against a wall! Others are carried direct to the shaft, and are either buried there amidst the wreck, or are blown up and over the pit-mouth: So powerful is the blast, that even in the shaft it frequently tears the brattice walls to pieces, blows the corves, which are hanging in the shaft, as high into the air as the ropes will allow them; and not unfrequently the ponderous pulley wheels are blown off the pit-head frame, and carried to a considerable distance in the midst of a thick cloud of coals and coal-dust brought from the mine by the volcanic eruption, which absolutely shakes the solid mass of earth that confines it. The dust rises to a great height, and sometimes obscures the light of the sun in the vicinity of the pit. No sooner is this part of the catastrophe over, and an awful silence produced, than the *back draught* commences, by the descent of air down the shaft to replace the air of the mine as it cools. Every part of the mine is filled with the most deleterious airs, particularly azote and carbonic acid, the result of combustion. Those miners, who were in the direct line of the explosion, have their fate quickly sealed. Others who are not in the direct current are dreadfully burnt. But though the greater number of the miners are at a distance from either of these calamities, yet their fate is perhaps the most severe. They hear the explosion; they know well the certain consequences of it; every one thinks of his personal safety; and the great object is to reach the pit-bottom. All the lights are generally extinguished, and they have to pursue their dreary path in awful darkness—a darkness rendered terrible by the combination of uncommon circumstances. Some of them have been known to make most providential escapes, after clambering over fallen roofs, and the wreck where their fellow workmen lay entombed; but others, deviating from the direct course in the confusion of the scene, wander anxiously onward, dreading every moment to meet the returning pestilential air. At last they feel its power, and knowing the certainty of their fate, they cease to struggle with what is irresistible; they resign their hopes; fall down in a reclining posture; nature is soon exhausted, and they sink in death as if asleep! Such is the fate of the hardy and industrious miners, who venture their lives every day for the comfort of others: and such, frequently, is the misfortune, which, in a moment, comes like a whirlwind, upon the best arranged mining concerns, after the most laborious exertions, and the most unremitting anxious concern of the mining engineers. The labors and plans of years are in an instant destroyed.

Sad and melancholy as the scene described is, perhaps it is the least part of the melancholy picture. From the general arrangements of the collieries, it is found a matter of economy and conveniency to have the workmen's houses, where their families reside, near to the pits. The consequence of this is, that the instant an explosion takes place, the alarm is general, and the wives and relations of those who are in the mine rush to the pit-mouth in a state of distraction, where a heart-rending scene takes place—a scene which may be imagined, but cannot be described. All the violent effects of sudden grief are the consequence. They look to the horrible pit where those who are

most dear to them are entombed, and who but a few hours ago had left them in health and vigor, with the hope of returning happy to their homes.

In such a case, the mining engineers have a severe and an imperious duty to perform. The pit, where they must descend, is either rendered dangerous by the wreck of loose timber torn away by the irruption, or the air is in a pestilential state; and, what is still more alarming, part of the coal may have taken fire from the explosion, or a blower may be ignited: either of which would produce repeated and violent explosions the instant the gas accumulated to that point so as to come in contact with the fire. Such a case is not unfrequent, and against this no human skill can guard. This fearful case, with the others before mentioned, is probably combined. All these have to be encountered by the engineer and his assistants. The hope of saving some of the workmen from death, and the ardent entreaties of the agonized relations, place the consideration of personal safety out of the question.

On descending to the bottom of the pit, it is perhaps with great difficulty the mine can be entered, owing to the wreck; if the descending current of air is good, part of the wreck is cleared away. The engineer then considers what are the best immediate plans to pursue, arising from his experience, and an accurate knowledge, not only of the general situation of the workings, but of the direct lines of the air courses, so that he may in the shortest time restore the ventilation, and, if possible, relieve the miners who may yet be alive. Having formed his plans, he states them to his assistants, and hears any improvements they may suggest; a great quantity of prop-wood and brattice deals are sent down, and they enter the mine as far as the air will allow them; care being taken to have it with them every step as they proceed, and in particular before leaving the shaft, they see that the brattice of it is air-tight; for if any openings are in it, the air would pass directly through it and ascend to the bank.

As the violence of the explosion destroys many of the stoppings, and almost every door upon the air-courses, the whole circulation is laid dead, and the fresh air will of course take the most direct course through the first opening to the upcast shaft. All these must be replaced as they proceed forward with the air; and this work being in general executed with astonishing quickness, many lives are frequently saved.

As soon as the ventilation is restored by these temporary brattices, the stoppings and doors are replaced in a substantial manner, and the workings are resumed with all their former vigor and activity, as if no misfortune had ever happened. From what is stated, it is evident, that the stability of the *main stopping*, is an important point, on which account it is counterforted by strong walls of stone; and if stones are easily procured in the mine, it is of great service to counterfort as many of the stoppings as can conveniently be done, so as to resist the explosive force of the fire, and give a greater facility in recovering the ventilation in the promptest manner. The oversmen and deputies who are employed in this service show a wonderful dexterity in placing temporary brattices. They will work in the dark, with the wreck of one destruction around them, and threatened every moment to be overwhelmed in another, in which the hope of saving a fellow-workman from death, gives the most lively energy to their actions; and if they think that a bold effort will save life, they will rush without fear into the midst of pestilential air, and grapple with death. The mining engineers are always at the head of this service, and as they, with their assistants, frequently push forward in the dark, they are exposed to the deleterious effects of the gases, and it is no uncommon thing for those who take the lead, to drop down lifeless, while those who are in the rear seize them by the feet and draw them back into better air, yet no sooner are they re-animated, than the same generous impulse acts in its full force, and they make the same attempt again and again, till nature is exhausted. We need scarcely add, that many fall a sacrifice to the ardor of their generous exertions.

When it is ascertained that fire exists in the wastes, either by the burning of the small dusty coal which lies along the roads, or that the solid coal is on fire, from the ignition of a blower, the descent into the mine is rendered tenfold more hazardous, as a moment's safety cannot be depended on; for if the discharge of gas is great, it rapidly accumulates, and the instant it reaches the place where the fire is, an explosion again takes place, and that repeatedly as long as the causes exist. There have been instances of this kind where the most violent explosions have taken place, regularly within the space of an hour, and continuing to do so for thirty-six hours, each irruption vomiting out of the pit-mouth like a volcano. In such cases, no man dare attempt to go down, as his destruction would be inevitable. As the case is desperate, desperate remedies must be applied, which are, either to moat up all the pits and exclude the air, or if this is not practicable, the colliery must be laid in and drowned, by allowing the water below ground to accumulate; and to aid the common growth, the tubbing in the shaft is tapped, and all the body of water from that quarter sent down: when the fire is extinguished, the colliery is refitted in the usual manner.

When fire exists in the waste, with less apparent hazard of life, the mining engineers, with their assistants, descend with portable fire-extinguishing engines. These are placed as near the burning matter as possible, and by playing upon it, the fire is speedily extinguished. It frequently happens, however, that although they see the fire before them, the state of the air prevents them from approaching near enough to allow the engines to play with effect. To remedy this, Mr. Buddle, with that ingenuity for which he is so conspicuous, conceived that the concussion of air which is produced by the discharge of artillery, might be effective in extinguishing fire, which could not be approached with the engines. He accordingly had small cannons made, and by charging them with powder only, and approaching as near the fire as possible, he has succeeded in blowing out flame by repeatedly firing them. This principle has been proposed lately for extinguishing houses which are on fire.

Such is an outline of the misfortunes incident to coal-mines, and to the engineers and workmen employed where inflammable air abounds.

In the manner before described, and with daily misfortunes of a lesser or greater degree, were the collieries of Great Britain carried on, every one

struggling against the direful ravages of the inflammable air; but it baffled the skill of the most experienced engineers, and all the precautions of their most unwearied diligence and anxious attention. The general question, and anxious inquiries were: Can no remedy be devised to avert these awful calamities, to deliver an industrious class of society from such desolating catastrophes? Many plans were proposed, but they were altogether inapplicable. The first person who stepped forward, a number of years ago, and wrote upon the subject, was Dr. Trotter, of Newcastle. He published a pamphlet, wherein he proposed to neutralize the carburetted hydrogen as soon as it appeared in the mine, by chemical agents. Every praise is due to him, for his very humane intentions, and earnest endeavor to remedy an evil so great. But although the principles he brought forward were consonant with sound philosophy, and were practicable upon a small scale, they were totally inapplicable to the extended workings of a coal-mine, where there were excavations of many hundred acres, and where the issue of gas was not only incessant, but in great abundance; hence, the principle was not only inapplicable in a general point of view, but the expense of the neutralizing substances must have been so great, even had the principle been applicable, as to render the plan altogether out of the question. After Dr. Trotter's pamphlet, nothing particular appeared for years upon this important subject, the mining engineers, therefore, applied their whole skill and energies in producing a circulation by the means before mentioned, particularly upon the principles of rarefaction and exhaustion by fire.

In some cases, fish, which in the incipient stage of putrefaction, give a strong phosphoric light, had been tried to give light to the miner in very dangerous cases; and the light produced by the collision of flint and steel was universally employed, when candles could not be used without producing an explosion. The machine for producing this light is named a steel mill, which will be particularly noticed afterwards. Philosophers proposed the various kinds of phosphorus, but these were altogether insufficient for the purpose. When tried in the mines, they only produced a most melancholy light, and rather tended to render the "darkness visible." In the mean time the mines were extended, and the melancholy catastrophes constantly increased. At last an explosion and catastrophe took place at Felling colliery, near Gateshead, in the county of Durham, about a mile and a half distant from Newcastle, more dreadful and melancholy in their consequences than any which had ever taken place in the collieries of Great Britain. This colliery was working with great vigor, and under a most regular system, both as to the mining operations and ventilation; the latter was effected by a furnace and air-tube placed upon a rise-pit on elevated ground, south from the turnpike road leading to Sunderland. The depth of the winning was above 100 fathoms; twenty-five acres of coal had been excavated, and such was the execution of work, that from one pit they were drawing at the rate of 1700 tons of coal weekly. Upon the 25th May, 1812, the night-shift was relieved by the day-shift of miners at eleven o'clock forenoon, one hundred and twenty-one persons were in the mine, and had taken their several places, when, at half-past eleven o'clock, the gas fired, and produced a most tremendous explosion, which alarmed all the neighboring villages. "The subterraneous fire broke forth with two heavy discharges from the dip-pit, and these were instantly followed by one from the rise-pit. A slight trembling, as from an earthquake, was felt for about half a mile around the colliery, and the noise of the explosion, though dull, was heard at from three to four miles distance. Immense quantities of dust and small coal accompanied these blasts, and rose high into the air, in the form of an inverted cone. The heaviest part of the ejected matter, such as corves, wood, and small coal, fell near the pits, but the dust borne away by a strong west wind, fell in a continued shower to the distance of a mile and a half from the pit. In the adjoining village of Heworth it caused a darkness like that of early twilight, and covered the roads so thickly, that the foot-steps of passengers were imprinted in it. The heads of both shaft-frames were blown off, their sides set on fire, and their pulleys shattered in pieces. The coal-dust ejected from the rise-pit into the horizontal part of the ventilating tube was about three inches thick, and soon burnt to a cinder; pieces of burning coal driven off the solid stratum of the mine were also blown up this shaft."

Such were the fearful and volcanic effects in the mine and atmosphere; but we have yet to state the result of the melancholy catastrophe as regarded the unfortunate miners. Of the 121 persons in the mine, at the time of the explosion, only 32 were drawn up the pit alive; and of these, three died within a few hours after the accident. Thus were no less than 92 persons killed in an instant by this desolating pestilence. The scene at the pit-mouth cannot be described.

The viewer, with his assistants, instantly descended, in the face of the most imminent danger, eager to save, if possible, any of the workmen; but the mine was found to be on fire, and they durst not proceed. In consequence of this fire, another explosion took place, and no alternative was left but to shut up the pits, and extinguish the fire, which was accordingly done. The pits were, after a considerable time, again opened, but it was the 19th day of September, before the complete ventilation was restored, and the last of the bodies of those who had perished was found; a period of 117 days from the day on which the accident took place. A minute account of this accident was published by Rev. John Hodgson, the worthy pastor of Heworth; who, upon this melancholy occasion, attended most assiduously, and performed the most painful duties amongst his suffering people. From his account of the misfortune, the particulars above stated are taken.

This fatal misfortune at Felling, roused the minds of every one connected with coal-mines, in order to find, if possible, a remedy for preventing such catastrophes.

It appears that Dr. William Reid Clanny, of Sunderland, who, from his medical profession, had frequently to attend the neighboring collieries, when the workmen were hurt by the explosions of the gas, had, in the year 1813, turned his attention to the construction of a lamp which would burn amongst inflammable air, and, though an explosion might take place in the lamp, would not communicate flame to the external surrounding

air. This he accomplished by means of an air-tight lamp with a glass front, the flame of which was supported by blowing air from a pair of small bellows through a stratum of water in the bottom of the lamp, while the heated air passed through water by a recurved tube at top. By this process. the air within the lamp was completely insulated from the external air; and it appears that this was the first lamp that ever was taken into a body of inflammable air in a coal mine at the exploding point, without producing an explosion of the surrounding gas. Dr. Clanny made another lamp upon an improved plan, by introducing into it the steam of water produced from a small vessel at the top of the lamp, heated by the flame. For these inventions, the doctor twice received the thanks of "The society for preventing the accidents in coal-mines;" and he also received the silver, and afterwards the gold medal from the Society of Arts, in London. Although these lamps, invented by Dr. Clanny, were upon philosophical principles, displayed much ingenuity, and were absolutely safety-lamps for mines, yet their construction prevented them from being generally used. Neverthless, Dr. Clanny deserves every praise for his labors and very zealous exertions in the cause of humanity. It appears that nothing farther was attempted in this important matter, until the accident at Felling colliery, as before noticed, when Sir Humphrey Davy, Mr. James Stevenson, engineer, Killingworth colliery, Newcastle, and Dr. John Murray of Edinburgh, brought forward safety-lamps, in the year 1816, each constructed upon different principles. Sir Humphrey Davy's lamp was made of fine iron wire-gauze, without any glass; that of Mr. Stevenson's was made of a strong glass cylinder, having a metal plate at top, and another at bottom, perforated with very small holes, to permit the air to pass to and from the lamp; and that of Dr. Murray was a glass lamp, or rather lanthern, to which good atmospheric air was brought by means of a long leather pipe from the air-course. Of these, Dr. Murray's lamp was not applicable but in a very few cases; the lamps of Sir Humphrey Davy and Mr. Stevenson were both complete safety-lamps in their principle, and are applied in practice; but that of Sir Humphrey Davy is decidedly the best, and is generally used in Great Britain. Having no glass, it is not easily injured, and sufficient light for the miner passes through the wire gauze. To each of the gentlemen, the world is highly indebted, and in particular, the mining interest of Great Britain, for their individual exertions.

The safety-lamp of Sir Humphrey Davy was instantly tried, and approved of by Mr. Buddle, and the principal mining engineers at Newcastle. No one was more zealous to prove its safety, and introduce it into the mines, than the Rev. John Hodgson, of Heworth, before mentioned. He descended the mines, entered amongst the inflammable air, and fully satisfied himself of its absolute safety, in order that he might induce the miners of his parish to use it, half of whom he had seen so lately swept away by the dreadful explosion before narrated.

The invention of this lamp has produced a new era in the coal-mining of Great Britain. The steel mills were very expensive, and in certain cases produced explosions, whereas the safety-lamp can be carried without danger amongst inflammable gas ready to explode; and, although the wire becomes red-hot, an explosion of the gas will take place inside of the lamp, without communicating inflammation to the external gas. While we very much admire the great ingenuity of the highly celebrated inventor, we are not less astonished at the uncommon simplicity of the construction.

RAT-CATCHERS AND RAT-CATCHING.

From the Penny Magazine.

Part of what the American ranger said of the bear (Washington Irving's 'Tour on the Prairies') may be applied in our island to the rat—it is the "knowingest vermint" of any creature we have. Its sagacity and cunning are really extraordinary, and its daring courage remarkable for an animal of its size. Yet though almost every person can produce a budget of stories about the catching and killing of rats, how few are there who have accurately observed their habits! We may often see people carefully baiting traps in a place where rats are swarming, and marvelling that none can be tempted to enter, when the simple reason is, that from want of a little consideration the sagacious instinct of the beast is a match for the awkwards attempts made to capture it. The truth is, we too cordially detest the rat to spend much time in watching its habits. It is, to the greater number of us, in every sense of the word, an "unclean" creature; and the prevailing thought is, not what are its habits, for some of these we know too well by the destruction it causes, but how soon we may get it exterminated or chased from our premises.

The rat belongs to the order *rodentia* of Cuvier, the *glires* of Linnæus. This order is characterised by two large incisors in each jaw, separated from the grinders by a vacant space, and destitute of canine teeth. Some of the genera have the grinders with flat or ridged crowns, others with blunt tubercles. They feed generally on vegetables, but the species with tuberculated grinders are nearly omnivorous. The number of genera in this order is considerable. We have, in Britain, the common mouse, the field mouse, the harvest mouse, the black rat, the brown rat, the water and field lemming, &c. *Mus rattus*, the black rat, is characterised by the body being black above; while *mus decumanus*, the brown or Norway rat, has the upper part of the body covered with light-brown hair, and whitish underneath. But localities, food, and age cause considerable varieties in the external appearance of our rats.

The brown rat, now the common rat of our island, is a comparatively recent importation into this country. But the time and manner of its importation cannot be ascertained. Its original country is said to be Persia, though now it is spread over the world. Stories have indeed been gravely told about an original pair or pairs having been brought over in some vessel from Norway (hence the name of Norway rat,) from whence the stock proceeded that now swarm in Britain. It is possible that such may have been the mode of their introduction, but that is all we can say about it. It appears to have attracted attention about the middle of last century, as multiplying exceedingly

fast, and as driving the black rat before it—at least thinning its numbers. But the brown rat aids in keeping its own species in check, a large rat being the terror of its weaker companions. Yet ferocious as they are, having no objection to prey on one another in lack of other provender, the female rat manifests strong maternal instinct, taking up its young and running with them to some supposed place of shelter on an alarm of danger, such as the turning of a ferret into their holes. They breed three times a year, producing from ten to twenty in a litter.

The antagonists most dreaded by the rat are the common weasel and the ferret. These little creatures, in proportion to their size, are more blood-thirsty and daring than the most tremendous of the rapacious quadrupeds. A cat or a dog cannot follow a rat into his hole, and a rat will defend itself against either with something of its natural courage, as long as there is the least chance of successful resistance. But to use a common phrase, it's "heart sinks" at the sight of a ferret. It will not die so helplessly submissive as a rabbit does when assailed by a weasel or a ferret, for in all circumstances a rat will die snapping and biting if it can. But turn a single ferret down a rat-hole, and the alarm and horror it creates is soon manifested. The rats fly wherever they can, the ferret pursuing and darting at the neck. The ferret does not always escape without savage wounds, for rat-catchers sometimes recover the animals they employ with such tokens of their conflicts as the loss of an eye. This superiority of the ferret over the rat is not to be attributed to mere superiority in strength, for a ferret is generally not above 14 inches in length, exclusive of the tail. But it is a resolute and dauntless creature, and not to be intimidated by a bite or two. The moment it fastens on its favorite spot, the neck, its victim is secured, for it cannot be shaken off till it has drained the life-blood. All regular rat-catchers therefore keep a number of ferrets for their occupation. The rats that fly to the mouth of the holes are killed by the dogs, while those who cannot escape meet a similar fate from the ferret. But they do not employ ferrets in places where there is a chance of losing them by drains or sewers. They set traps or use poison, and being well acquainted with the habits of the creatures they are employed to destroy, are enabled to catch or kill them with more success than others. Thus they are careful in mixing their poisons or baits to leave no scent which the rat may detect so as to rouse its suspicion, and they employ a little of some of the oils for which rats have a strong predilection. One of these, as is well known, is the oil of rhodium. A bait scented with it will draw a rat into almost any trap, if the person who has handled it is careful not to leave behind a scent or flavor of his hands. A mixture made up in the following proportions has been very effectual:—a quart of oatmeal, four drops of the oil of rhodium, a grain of musk, and two nuts of nux vomica powdered. But, of course, caution is requisite in the employment of poison; and those who do not wish to have the comfort of their houses affected, will think of what may follow if a poisoned rat dies behind the wainscot. A little perseverance will frequently drive away rats from a dwelling-house, if care is taken to block up their holes with broken glass, &c., and plastering them over, repeating the process wherever a new entry is made. If the house is in a country place this may be done during summer, when the rats generally take to the fields. But in large establishments, where they can find food in abundance, and great facilities for shelter, it is very difficult to get rid of the pests; all the ordinary means are frequently found to fail, such as the use of traps, poison, ill-treating a rat and letting it off, &c. The following little narrative contains a few particulars of what frequently occurs when the attempt to exterminate rats is not managed properly.

In a large establishment, where many men and boys were employed, a colony of rats grew to such an extent as to become a seriously destructive pest. Much time was lost every morning in repairing damages inflicted on work during the preceding night by these destructive gnawers; and though for a time poison seemed to have some effect, it lost its power, for the rats impudently dragged out the dead bodies of their comrades, leaving them in the court-yard, or on the floor, and then, instructed by their instinctive sagacity, refused to taste any thing which their sense of smell told them had poison mixed with it. A number of cats were kept, but they were comparatively useless, for they either slept during the night, or, overawed by the number of their antagonists, did not attempt to give them much molestation. Traps were also employed, and for a time were useful in diminishing the numbers of the rats. Every morning many prisoners were found in them, most of them however being either young or not full grown, for the old rats were wary in committing themselves. The watch-dog, being an admirable rat-killer, was employed to destroy the prisoners; and it became a regular piece of sport to open the traps in the yard, and admire the dog's slaughtering dexterity. In fact, so exciting did this sport become, that many a lazy fellow, young and old, noted for their habits of lagging in after the regular hour of commencing work, now became "early risers," and thronged with the rest to enjoy the fun. The dog was not only a dexterous but a humane slaughterer. He gave no unnecessary torture; never tantalized his victim while it lived, nor "worried" or mangled the body when dead. If half a dozen rats were turned out at once, he wheeled nimbly about, caught each by the nape of the neck, disabling it with a bite, and having thus prevented their escape, he would deliberately return, going to each in succession, and extinguish life by another bite or two.

But poison, traps, cats, and dog seemed all ineffectual. The rats refused to enter the traps, and the regular morning's sport became scanty and unexciting, while the damage done during the night continued as much as ever. Ingenuity was baffled, for the rats improved remarkably in cunning. There were some windows that overlooked a place where rubbish and garbage were thrown. This was a central feeding-place for the rats, and during the day considerable havoc was committed by the discharge of mimic arrows, many of the boys being provided with little bows and arrows, with which they amused themselves, often when they should have been attending their employment. During the dinner hour, when all was still, first one head, and then another, would ap-

pear at the mouth of the rat-holes, the sharp cunning eyes carefully scanning the windows above, to see if there was any danger before venturing out. By-and-by, if all continued quiet, one or two young ones would emerge, followed by a few more, but the old ones would rarely trust themselves out without a long continued assurance of peace and safety. Even the young ones learned caution. Amongst other expedients, a box was balanced on a stick, with a bait inside. One morning the box was discovered to be down, but the floor round about was strewed with chips. A rat had pulled the box down upon himself, but he scorned to be kept a prisoner. He had gnawed the floor, scooping out a channel, and then cut out an archway in the side of the box, through which he had walked out.

It was suggested to the head of the establishment, that if he would cause a live rat to be smeared with some offensive ingredient, and then turned off, its smell would so annoy the others, as to make them shift their quarters. It was done, but the rats did not choose that their whole body politic should be upset because one unlucky vagrant was ill-flavored. Whether he was killed, or merely expelled, did not appear. Another experiment was tried—a cruel and a hazardous one. A large rat, daubed over with turpentine, was set fire to, and suffered to go off, its body smoking, and a long piece of cord being attached to its tail. It was found about a week afterwards in the court-yard, having been killed during the night by the dog. It had nipped its tail off, close to the body, in order to get rid of the cord, and seemed to have been recovering from the effects of the useless and dangerous mode of torture to which it had been subjected; but whether or not it had lost "caste" amongst its acquaintance and neighbors, and had become a wanderer, could not be ascertained.

At last a rat-catcher was employed, and it was amusing to remark the quiet mysterious air with which he affected to go about his business, and the contempt he manifested towards all dabblers in the science of rat-catching. He came with his ferrets and his dogs, and began his operations in an out-house. Presently the barking of the dogs told him that there were rats below, and taking a ferret from his bag, he let it descend. In a minute or two, a squealing announced the alarm and dismay which the presence and assault of the ferret had caused; and the rat-catcher, giving the word of command to his dogs, "Stand!" set each to guard a separate hole. Several rats now sprang out, and were killed, and a considerable number were killed by the ferret, which was some time before it re-appeared, having stayed below to gorge itself. The rat-catcher was employed for about a week, during which time he destroyed a great number. On some part of the premises he would not let his ferrets loose, fearful of not recovering them, if they entered a drain or sewer. There he employed poison and traps, and was certainly very successful in capturing. He did not exterminate the colony, but he seriously thinned its numbers.

A rat-catcher usually agrees with a farmer or country gentleman to keep his house and grounds free from rats for an annual payment, or else he is paid so much for the particular job. The first mode of payment is, of course, the most satisfactory to a man who follows rat-catching as a profession, as it constitutes one of his certain dependencies for a livelihood. One rat-catcher, who lives in the neighborhood of London, states that he usually keeps from twenty to thirty ferrets, which he feeds with rats. A thoroughly trained ferret, when let loose, will kill as many rats as it can, and return to its keeper, but one not so docile often stays a long time in the rat-holes, feeding on the animals it has killed.

The individual rat-catcher to whom we have alluded mentions that, on one occasion, he turned a ferret into a rat-hole in a barn, when he heard the usual signals of distress, evincing the havoc it was making. After having waited a long time, he heard a sound, as if the ferret was uttering a stifled kind of moan, and being anxious to ascertain the cause, he got a board to be lifted, and found that the ferret had completely blocked up the passage behind it with the bodies of the rats it had killed, and was suffocating for want of air. When a ferret is employed to turn out rabbits, the rat-catcher secures its mouth by a stitch on each side.

The voracious and destructive habits of the rat not only make it a great pest wherever grain is housed or stacked, but cause it to be disliked generally wherever it makes its appearance. We can almost tolerate a mouse in the drawing-room, when the appearance of a rat in the kitchen creates a shudder of horror. A thoroughly-domesticated cat usually declines a combat with a full-grown rat, though we have seen a kitten assail a rat nearly as large as itself, unsuccessfully yet courageously. But rat-catchers know that localities have great influence on the savage nature of rats—a rule, in fact, which holds with all savage animals, large and small. In places where they are not much hunted and scared, rats are cunning and timid, and a person who has nerve and dexterity enough to seize one with his hand will sometimes find them so overcome with fear as scarcely to attempt to bite. Thus we have seen a boy (and doubtless many persons have witnessed similar feats) seize a large rat, raise it in the air, and dash it on the ground. But wherever they are in considerable numbers, and are not much disturbed, they are audacious and fierce, and bite wickedly and cruelly.

FAILURE OF LATE BROODS OF SILK-WORMS.

From the Journal of the American Silk Society.

August 12, 1840.

GIDEON B. SMITH, ESQ.

Dear Sir—By common consent, the cultivators of the silk-worm look to you for information on all matters connected with silk culture. From the experience of the present season, it is obvious that we have much to learn, though it cannot be denied that much has been achieved. In my district of country, and as far as I have heard from, more remote parts—and my information has been quite extensive—the early broods of silk-worms were healthy without scarcely any exception. If there were exceptions, they were owing to tainted eggs. Not only was the result satisfactory and encouraging in cases where the rearings were judiciously conducted, but there have been equally successful rearings where almost every rule of

good management has been disregarded. There is then great cause for congratulation, thus far. But as the season advanced, success became less certain. For a while the worms would do well until the moment of mounting, when they would nearly all die off. Subsequently they would become diseased at an earlier age; and now, very few are found to survive the second moulting.

Although the season has been exceedingly unfavorable, it is impossible to ascribe all the disasters to it. It only requires a little extra trouble and care, to obviate all the disadvantages of weather. Being deeply interested in the business, and having observed its progress very closely, I am clearly of opinion that the eggs have gradually become contaminated by the process of retarding. The inquiry then naturally arises, whether retarding is *necessarily* injurious to the good quality of eggs? Is there no mode by which the hatching impulse can be arrested without imparting a taint to the constitution of the embryo, which no subsequent treatment can overcome? It is to the consideration of this inquiry that I wish to direct your attention. You have facilities, not only for diffusing but for collecting information, which no other man possesses; and I beg leave to suggest that the debt of gratitude which the community now owes to your public spirit and patriotism, would be still further increased, if you would investigate this subject, and make known such plans as have been found to succeed, of preserving the eggs for successive crops.

At the commencement of the present season, I was full of expectation and buoyant with hope. My first crop of cocoons were equal in quality to any I have ever seen. I thought I had some reason to look forward to continued success; for I had a large number of what I estimated the *best eggs*, carefully deposited on ice in January, perfectly secure from moisture, and kept at a temperature ranging from 37 to 47 degrees. Up to the present time their vitality is not in the least impaired; for they hatch with the greatest uniformity in nine or ten days after exposure. The worms are active and hearty until the first moulting; but as they approach and emerge from this state, they spread a thick tissue of web over the litter, covering themselves with it, and with some difficulty escaping from it at the commencement of the second age. The appearance of this web I have come to regard as an unerring symptom of debility. From the time of the first moulting, the worms begin to rapidly disappear; and few or none long survive the third change.

The disappointment occasioned by these losses has been very grievous; but believing that there is a remedy, and having undiminished confidence in the practicability of silk culture, I intend to persevere with renewed energy. P.

PRESERVATION OF CABBAGES.

From the Albany Cultivator.

The following methods of preserving cabbages for winter use are the result of experience.

The cabbages should be gathered before injury is done them by the severe fall frosts; the heavy outside leaves should remain on the stalk. Fix a string or cord round the stumps near the roots, suspend from the sleepers with the heads downward in a cool cellar, and they are ready and fit for use at all times. Cabbages kept in this manner retain all their peculiar flavor and sweetness; the whole virtue of the stump and leaves is concentrated in the part which is used, are handy of access, occupy but little room which would be occupied by other purposes, and seldom if ever rot; the outside leaves wilt and contract, and in time become quite dry, which form a sort of coating that serves to exclude the air from the inside of the head.

Another method practised by some, and highly recommended, is to cut the head from the stump, pack close in a sack, taking care to fill up the vacancies with dry chaff, thereby excluding the air, and keep in a dry cellar.

CATERPILLAR IN THE COTTON.

From the New Orleans Bulletin.

A letter, dated 12th August, written by an intelligent planter at Hope, in the Red River district, and received by the Bogue Homa, which has been handed to us by a commercial house of the city, says:—

"We have terrible reports of the caterpillar; that they are sweeping every thing on Bayous, Bœuf and Robert, and on the river. On this Bayou I hear they are very bad at Dick's, Whillington's, Manader's, Roger's, Davison's, Gordon's and Texada's, below me; and at Winn & Neall's, Davidson & Hale's, Bullard & Clauton's, and Gray's, above me. In my own crop, I discovered a few; but they sometimes spread so fast as to spread over a whole crop in a week; and cotton, in which they are now pretty general, cannot make, under the best of circumstances, more than half a crop. J. Brown told me that a part of his Johnston plantation looked precisely as if it had been burnt. I am told Smith W. Gordon, who you know is a very shrewd man, and who ought in a fair season to make 250 bales, says he will give his crop to any one for 50 bales.

TARRING TREES TO PROTECT THEM FROM THE CANKER WORM.

From the Yankee Farmer.

A gentleman, who has had some experience in the business, considers the tarring the cheapest and an effectual remedy against the canker worm. He says that their ravages may in this way be prevented with an expense not exceeding one-fourth or one-half of the interest on the sum necessary to protect trees with troughs.

This year he had about fifty apple trees on his place, which he occupied for the first season. Last year nothing was done to destroy the worms, and they were very numerous, destroying all the foliage on the trees; so that he commenced operations under unfavorable circumstances, for with proper care annually their ascent upon the trees would have been prevented, and of course they would have been much less numerous.

In the spring he cut stout brown paper into strips of five or six inches, tarred one side of the

paper and then put them round the tree, with the tarred side next to the tree, which caused it to adhere. Then he tarred the paper outside.

With the aid of a boy he tarred the fifty trees in this way in a very short time, and the boy put on tar every day until the season for the worms was over. This daily operation required but a few minutes every time. The whole expense was but a trifle—no more probably than would be required in managing with the tin or leaden troughs after they are on the trees.

The trees in this case were well protected, though a few worms were on the trees, probably from eggs that were laid by grubs, that ascended the trees in the fall or in pleasant days in winter. These did no material injury. To prevent this small evil it would be well to tar in the fall, and also in warm days in winter, and in the spring it should be attended to daily till the season for the worms to ascend is past.

In the case here named the worms were so numerous that they would sometimes form a bridge almost across the tar in one night. If this or any other good method of destroying canker worms was carefully pursued by all who have orchards, these depredators would soon become scarce, and with little trouble their ravages would be almost entirely prevented.

EXPERIMENT OF DEEP TILLAGE AND BREAKING THE ROOTS OF CORN.

To the Editor of the Farmers' Register.

Little Rock, Ark., Aug. 15, 1840.

In the May and June numbers of the Farmers' Register, I see some remarks upon the culture of Indian corn. I have long thought it strange that this valuable plant had received so small a share of scientific attention. We are in the practice of planting and cultivating as our fathers have done, without once supposing that the cultivation of *corn* could be improved. The object of these lines is not, however, to discuss this subject, but to state a *fact* in relation to root-breaking, &c.

In April, 1834, I planted a small lot of corn. The soil was a light silicious soil, with a red clay subsoil. I planted in hills at the distance of four feet. The plough I used was a single coulter, made of an inch and a half bar. With this simple instrument, (for I used no other,) I cultivated my corn. The mode of using it was to run within four inches of the corn-plants, and not less than seven or eight inches deep. This was performed both ways, crossing at right angles eight inches apart, the corn being in the middle of the square. This severe and apparently destructive operation was repeated four times during the growing of the corn. The summer was very dry and warm, my land quite arid. Notwithstanding, my corn-blades did not twist at any time, which was a subject of remark at the time. In the month of September, I had a part of the corn cut off to make room for a building; when digging the foundation I found roots more than 20 inches below the surface. This was, no doubt, the reason of the vigorous growth of the corn, the subsoil being more moist than the surface, gave nourishment to the stalks. The inference that I and one or two others drew from the fact, was, that by cutting the roots and keeping the soil open and loose, the roots assumed a vertical instead of a horizontal direction. Violent agitation of the earth about, and even breaking, the roots of many other kinds of plants, is by no means injurious. The tobacco, when about to stop its growth, if it be pulled so as to break many roots and start the whole plant, will give it new vigor. (This must be done during rain.) A wound on trees, and even cutting away the whole of the old wood is often beneficial. These remarks are made for the consideration of those who may have more information than I have. The whole may be a mistake, or an exception to a general rule.

I design giving, at some future period, a general description of the soils, natural productions and resources of our state. I greatly desire to have a full set of your Register, but must defer for a while.

Respectfully,

W. W. Stevenson.

THE PROPER CULTIVATION OF, AND ANNUAL CROPS FOR PEACH ORCHARDS.

To the Editor of the Farmers' Register.

During the last twenty some odd years, a communication has been almost annually going the rounds of agricultural papers, the production of a worthy man and a zealous, enterprising agriculturist of Pennsylvania, a Mr. Colter, on the subject of cultivating the *peach tree.*

Many years ago, I determined on the cultivation of that fruit, with a view to distillation and the fabrication of brandy; but, before my orchard had become productive, as the result of observation and much serious reflection, I determined that, next to original sin, ardent spirits was the greatest curse on earth; and, consequently, determined to find some other outlet for my little portion of industry and enterprise, less objectionable. Passing through Virginia and North Carolina about the same time, I found to my agreeable surprise that, as an article in the production of *animal food*, the peach, if judiciously selected, and managed, was not excelled, when every thing was taken into view. I found, however, that the method suggested by Mr. Colter was opposed to a judicious and economical management of both fruit and soil.

About the last of July, I found my little orchard cultivated on this gentleman's plan perfectly prostrated—the trees lapped—it was painful to go through it—and the load of fruit lying on the ground, part amongst the grass and weeds. For to give the soil that degree of cultivation necessary to keep it clean, was impossible.

I became still further satisfied, from facts before me, that the ground amongst fruit trees cannot be kept too loose, or too clear of grass and weeds. I determined, therefore, that some ameliorating crop must be found and annually cultivated among my fruit trees to insure good fruit, and abundant crops, as also lasting trees. In selecting this crop to carry out my plan, which was to raise the peach for the production of pork, I found that some of the pea tribe, after the trees arrive at the bearing state, and the potato, previously, were the only plants unobjectionable; and I found in this section of the union varieties of both, fully answering my views,

coming to full maturity, as the peaches began to ripen in June. I found a pea that produced admirably, and even under the trees, running up their bodies, spreading through the limbs and bearing well—and uninjured by the winter rains. And here, I will add, as the result of no slight experience, that, notwithstanding the peach tree is so highly benefited by stirring the earth around its roots, to produce the best effect, it must be done only in the fall, winter, and in the spring after the blossom is off. And, to settle this part of the subject, as far as regards my practice, I will state, that as soon as the vines of the potato or pea cultivated in the orchard, are sufficiently rotten to turn under with the bar-share, the first ploughing takes place, the next previous to planting, and the last on the cultivation of the crop. I am fully satisfied that the roots of the tree require to be kept cool and at rest (when the tree is in the bearing state) the balance of the summer, for which the only two crops I can admit, are admirably calculated. The little bunch potato comes to maturity with us in June, and produces admirably. The vine hardly runs, but covers the earth with a mass of leaf and short vine. Not wishing to take up too much of your valuable columns, I will continue the subject in other numbers.

CULTIVATOR.

Alabama, 1st September, 1840.

Our correspondent need not entertain the fear expressed in his last sentence. We should be glad to have him a frequent contributor to our pages, and to occupy as much space as his leisure may permit. His present subject is one of much interest, and the more fully in detail his practical experience shall be stated, so much the better. Judging from his southern locality, we presume that he speaks of the *sweet* and not the Irish potato.—ED. F. R.

REELING SILK IN PHILADELPHIA.

From the Journal of the American Silk Society.

At the model filature in Philadelphia, we learn from an article in the United States Gazette, the following has been the result of practice:—

Elizabeth Williams began learning to reel silk on the 9th of last month, (June.) July 15th commenced at half past 8 o'clock, and reeled her bushel of cocoons by 3 o'clock in the afternoon, having had a recess from 12 to 1 o'clock. Obtained from the bushel 20 ounces and a half, and continuing her work till 6 o'clock, P. M., reeled 28 ounces in the day. The cocoons were of the pea-nut variety, and very good. The silk 25 fibres.

On the 16th, the same girl reeled from similar cocoons, and without any extraordinary exertion, 2 pounds and 1 ounce of 25 fibre silk, between the hours of half past 7 A. M., and 6 P. M.

Hannah Hill commenced learning to reel May 27th, (of this year,) and obtained from her bushel of pea-nut cocoons, 22 ounces. In the course of the day she reeled altogether 24 ounces of 25 fibre silk.

Cornelia King began learning July 1st, and only about a fortnight afterwards, namely, on the 16th of July, got 18 ounces of 25 fibre silk from one bushel of pea-nut cocoons.

In the silk filatures in Europe, from one to one pound and a half is considered the daily task of an experienced reeler. FRANKLIN.

RHODE ISLAND AGRICULTURE.

Extract from the Geological Survey of Rhode Island, by DR. C. JACKSON.

Report of the Crops, &c. raised on the Rivulet Farm, in Cranston, 1839.

The land consists of 15 acres under tillage,
75 ' in grazing,
15 ' clover meadows,
25 ' watered '
30 ' river '
50 ' in wood,
10 to 15 ' peat bog,
5 to 10 ' unreclaimed.

Stock.

15 cows,	$570	2 horses,	$110
1 bull,	25	21 sheep,	63
1 pair of large oxen,	160	18 head swine,	108
2 heifers,	50	Turkeys, &c.	44

Produce Raised and Sold.

Corn on 3 acres, average quantity, 58 bush. to the acre.	$150
" 5 " injured by the August gale,	60
Barley and oats, 4 acres,	33
Potatoes, 3 acres, 450 bushels marketable,	150
" 50 " for feeding cattle,	12
Beets and carrots, valued at	25
Fruit, (not sold.)	
1800 lbs. pork, sold from 7 to 8 cents per lb.	130
Pigs raised,	22
' sold.	8
Lambs, 18 sold at $3 each,	54
Calves, 14, " $5 50 each,	77
Profits in carting wood cut on the farm,	48
7 tons of hay sold, $18 per ton,	126
5 " unsold,	70
1455 lbs. butter sold, at from 26 to 33 1-3 cts. per pound,	380
Butter and milk used in family,	30
Premium received on butter exhibited at the Rhode Island cattle show,	15
Received for improvements on the farm,	48
Received for boarding laborers,	32
	$1470

Expense.

Two hands, each 7 months, at $12 1-2 per month,	$175
1 boy, 7 months,	35
Paid for labor in getting hay,	26
1 hand in winter 5 months, at $8,	40
1 boy, do.	10
Board of laborers reckoned at $1 per week,	130
Grain, potatoes, and hay seed, used in the spring,	60
Salt for manure,	10
Salt for dairy,	6
Taxes,	28
Blacksmith's bill,	24
Balance, from which deduct rent of farm and family expenses,	926
	$1470

The farm was not fully stocked, being unwilling in the spring to pay the high prices demanded for neat cattle. I. A. GARDINER, Tenant.

In reply to your inquiry, what experiments in agriculture have you made? we reply, that on this farm we have made many: some successful and some otherwise. We will give you as brief a detail as possible of some of them. We irrigate about twenty-five acres of upland, mostly the sloping sides of hills. The water used is from springs that rise on the farm, on the highest land. We formed a reservoir by the erection of a dam, and are therefore enabled to retain nearly all the water that collects in the day and run it on to the meadows in the night, preventing the grass from being scorched or wilted as it would be if put on in the heat of the day. We carry a portion of this water to our barn yards, to our hog pens, and also to our dairy house, where we have put in a water wheel for the purpose solely of aiding the dairy maid in the process of making butter, and find a very considerable labor saved. We intended to have used the water power in churning the milk daily, instead of the cream, in the manner practised by some of the western farmers. We tried the experiment, and found no difficulty in the process, and the butter was excellent, but the quantity fell short so materially that we abandoned it.

We tried the experiment recommended by some Pennsylvania farmers, that of setting the milk partly under ground, and letting the water constantly run round the pans of milk by setting them into excavated shelves. We found that the milk would keep sweet longer and the cream was equally as good, if not better. But here again we found a diminution: so much cream would not rise on the milk. We therefore continue the old mode.

This experiment convinces us, that a milk room should stand separate and apart from any other building, be of good size and height, well ventilated, and shaded with forest trees, and be used solely for that purpose.

We have tried the experiment of flooding land. We built a dam on a small river that runs through the farm, on the sides of which are what is termed interval or river meadows, (about thirty acres,) and by flowing back we cover the whole extent, and keep them flowed from November to April, when we draw it off and find slime and mud deposited on the surface that enriches it, and our crops of grass have increased thereby both in quantity and quality. We cart sea weed a distance of from four to six miles, and we think we find our account in it when properly used. It should be spread in hog pens or yards, small in extent, and coarse sand, (the best is found on the shores,) mixed with or spread over it, which will be by this preparation converted into fine compost by the swine being yarded upon it. We derive another advantage in putting the sea and rock week into our hog yards; they will feed considerably on it, and it serves to make them healthy and prepares them for fattening.

We use considerable impure salt in our composting. We purchase the sweepings of the vessels' holds, in which it is imported, and consider it a cheap, valuable material for the purpose.

Some of our neighboring farmers, cart salt water from the sea shore, a distance of several miles, and think it better than to let their teams be idle. This they spread on beds of loam, and it is thereby very soon converted into a black mould.

We salt our river meadow hay, putting from two to three pecks of fine Liverpool salt to the ton, and we think we are thrice paid for so doing; firstly, in the time saved in curing the hay; secondly, in its increased value; and thirdly, in the salting of the cattle which are fed on it. Besides we find that low meadow hay, when salted, will not deteriorate if kept several years, and we believe it improves by being kept two years.

We had dug some peat for fuel, and used it to some advantage; but until we heard the suggestions you made of the possibility that our worn out soils might by the aid of peat be restored, we had not tried it to any extent as a manure. We have since opened a bed on the farm and dug out about 100 loads, at an expense of about 15 cents per load, with which we mixed ten tons of animal manure and six casks of Harris rock lime, which cost in Providence, $1 25 per cask. The frost pulverized it, and we found it this spring in a good state for spreading on our meadows, and to use on our corn and potato fields. On the meadows we have already ample evidence of its utility.

We have experimented with menhaden fish. For the first and second year they appeared to be a benefit, but afterwards we found the land less productive than it was before the fish was put on, and indeed in some places almost barren.

We are of opinion that fish operates on the land like the free use of ardent spirits on the system of the laborer, who, while the excitement is on, is enabled to do more work; but when it is gone is left in a torpid and enfeebled state.

REPORT OF THE ROTCH FARM, N. PROVIDENCE, [R. I.] LEASED AND CULTIVATED BY MR. ADAM ANTHONY.

From the same.

I have great satisfaction, says Dr. Jackson, in laying before the citizens of Rhode Island, the very lucid and detailed report of Mr. Adam Anthony, who is one of the most intelligent and successful farmers in the state. Mr. Anthony cultivates a farm leased of Mr. William Rotch, of New Bedford. The farm is situated two miles north of the city of Providence, and the soil is naturally poor, light and sandy, with some patches of thin swamp, having a light covering of black peat. A large portion of this farm was originally almost barren, or supported only a thin forest of pine trees. By chemical analysis of the natural soil, it was found to be an ancient granite diluvium, charged with decomposed vegetable matters, in an acid state. Hence the theory of his improvements by means of ashes, containing alkaline matter and lime.

* * * * *

Memoranda furnished by Mr. Anthony.

Farm consists of

Ploughed land	30	acres,	valued at	$141	per acre.
Pasture	26	'	'	70	'
Mowing	18	'	'	150	'
Wood	30	'	'	40	'

Crops.

Corn, 268 bushels—64 1-2 bu. per acre: soil, sand and sandy loam: manure, 7 cords per acre.

Potatoes, 592 bushels—236 bu. per acre: soil, sand and sandy loam: manure, 7 cords per acre.

Turnips, 1300 bushels—650 bu. per acre: soil, sand and sandy loam: 240 bushels of ashes; manure, 3 1-2 cords per acre.

Barley, 10 tons—1 3-4 tons per acre; cut for fodder: soil, sand and sandy loam.

Hay, 50 tons—2 3-4 tons per acre; 5 acres upland, 3 lowland; sandy; 10 of reclaimed peat bog; 2 acres of upland, top dressed with 5 cords manure per acre.

Millet, 40 tons—2 3-4 tons per acre; soil, sandy; 4 1-2 acres no manure—10 ashed, 100 bushels to acre.

Pumpkins, 5 tons from among corn.

Other produce.—Beef, 9500 lbs.; pork, 567 lbs.; milk, 8764 gallons.

Cost of cultivation per acre.		*Value of crop.*
Indian corn,	$49	$87 25
Barley,	27	31 00
Potatoes,	46	78 00
Turnips,	47	116 00
Hay,	21	49 00
Millet,	24	49 00
Stock.		*Value.*
1 horse,		$50
2 oxen,		70
18 cows,		648

—

North Providence, 12 mo. 2, 1839.

DR. C. T. JACKSON—*Esteemed Friend*—Having filled such of the blanks in the form appended to the circular as were necessary to the requisite statements respecting my crops of this year, I avail myself of the convenience of a separate sheet to notice such of the questions as I am able to answer.

I have made no experiments that have been sufficiently carried out to be of other importance than as affording suggestions for further trial and more accurate and extended observation. Of this character are those with nitre, potash, &c., of which a statement has already been given. It may be well, however, to repeat it here. Several plats of ground, each containing a rod, half a rod apart, on a field of sandy soil which had been recently sown with millet, without manure, were treated in the following manner: one with lime, one with ground oyster shells, and another with salt—four quarts to each: one with a peck of recent, another with the same quantity of spent ashes: the next with potash and the last with saltpetre—each a pound. The lime and oyster shells produced no effects, the millet being no better than on the undressed ground about them. Salt had been furnished in too large a quantity, and destroyed most of the seed. The few plants that came, however, grew very luxuriantly. There was no perceivable difference in the ashed portions, the crop being alike better than on the intermediate spaces. Potash and nitre gave the best results, the latter the most striking. The ground was in fine condition. It produced at least three and a half tons of millet to the acre.

I have tried lime in but a few instances, and not at all in composts. In a potato drill, on a sandy loam, it was evidently injurious to the crop; and as a top dressing for grass grounds, one a sandy soil, the other a reclaimed bog abounding in vegetable matter, it was of no perceivable benefit.

Spent wood ashes have been the principal manure which I have used in amending the condition of light loams and sandy and gravelly soils. On all these they are used to great advantage; and to a profitable result in the improvement of the two last mentioned, combined with the growing of clover they are almost indispensable, especially if the soil be of very sterile character.

Besides the experiment above noticed with ground oyster shells, I have applied them to sandy and to loamy soil for grass and for turnips, but without effect.

Bog mud of peaty character has been used to some extent in my manure trenches, and is deemed excellent for the purpose—more valuable than loam.

On the sandy and poorer grounds of the farm millet and clover are the most profitable crops. On those of firmer texture the root culture has given the best results. A part of the difference in the superior profit, however, is but apparent. Requiring most or all of the season to perfect their growth they prevent, without some intervenient crop, late summer or early fall seeding, the seasons, I believe, in which lands in high condition are most profitably laid down to grass. The value of the produce of the farm this year, inclusive of pasture, feed and the products of garden grounds (included in the ploughed land, but not otherwise noticed,) is $2840. And it appears on examination of my accounts, that its conversion into the forms in which most of it is disposed of, is not likely to give a very dissimilar result. Sales have been made to the amount of $2962 84, and there is on hand $669, worth more than at the commencement of the year. To this should be added $600 for the manure made by the stock; making in the aggregate $4231 84. From this sum should be deducted the cost of the grain purchased, and the hogs and cattle fatted, which amounts to $1214 65, leaving a balance of $3017 19 as the value of the produce. The excess over the first estimate of $177 19, will probably defray all extra expense incurred by the disposition which is made of it.

The liquid manure from the stock is saved, but has never been separately applied. Both this and the solid matter are received into a trench in the rear of the cattle stalls, and with the admixture of bog mud or loam, make a compost much more valuable than ordinary stable manure. Six dollars a cord for it may be thought to put an end to all profitable results in farming, but the effects of its application sustain me in this opinion of its value. It is charged at five dollars, in my estimates of the cost of crops, one sixth part, I consider, as being appropriated by the soil to its own improvement.

I have limited my estimates in regard to crops, to such only as have been raised on the farm this year. There are others, in the culture of which I have had some experience; such as oats, beets and carrots. Oats, in general, give about the same results as barley. Beets and carrots cost more in the cultivation than ruta baga; beets perhaps $6, and carrots $12 an acre. The product, with me, has been about the same, and they are probably of equal value. The difference, if there be any, as food for stock, has escaped my observation. In regard to beets, however, I speak only in reference to the scarcity and yellow French. The white and red are said to be of better quality.

In the valuation of the lands of the farm, buildings have not been included. These, exclusive of

the dwelling house, would add about twenty per cent. to their value, and of course, about one and a half per cent. to the cost of crops as interest.

Respectfully, and very truly thy friend,

ADAM ANTHONY.

CANALS AND RAILROADS OF VA.

From Tanner's Railroads and Canals of the U. S.

CANALS.

James River and Kanawha Canal and Railroad.—This work is nearly completed, by canal, with some slack-water navigation, between Richmond and Lynchburg, and is under contract between Lynchburg and the mouth of North river, Rockbridge county, Virginia. Beyond this point it is yet doubtful what direction it may take. One of the plans being to continue the canal to Covington, and thence construct railroad across the Allegany mountains to the Greenbrier, and thence along that stream and the Kanawha, and by way of the valley of the Mud river and the Guyandotte, to the Ohio, at the mouth of the latter stream. The other to continue the canal only to Buchanan, taking the railroad thence along the valley of Virginia to the New river, and thence down this river and the Kanawha to the point of divergence to the valley of the Mud river and the Guyandotte, as above. The latter rout seems to be preferable, not only by its greater natural facilities, but because the position of the railroad between Buchanan and the New river would, whilst constituting a part of the great western communication of the state, be at the same time so much done of its south western railroad, a work promising perhaps to the commonwealth even greater advantages than its connexion with the Kanawha and Ohio, inasmuch as it would reach a trade not competed for by the lines of improvement through Pennsylvania and Maryland, and which might, therefore, be secured entirely to Virginia. Whatever direction the James and Kanawha line of improvement may take, it is to be hoped, for the welfare of the state, that its great south-western railroad will not be long delayed. As soon as it shall be completed, it may be expected to pour into the canal an immense trade, and to convey on it a very great travel; and until it is effected, the state can scarcely be expected to derive from her investment in the canal, an amount of revenue to justify her expenditure in its construction.

The whole length of the James and Kanawha canal and railroad, when completed to the Ohio, will be about 425 miles, that of the proposed South-western railroad from Buchanan to the Tennessee line, about 160 miles.

Dismal Swamp Canal--extends from Deep creek, a tributary of Chesapeake Bay, to Joice's creek, a branch of Pasquotank river, of Albemarle Sound; length 23 miles; 46 feet wide, 6½ deep; at intervals of a quarter of a mile, the canal is widened to 60, for turn-out stations; 6 locks, 100 by 20 feet; summit level 16½ feet above the Atlantic at mid tide. Two lateral canals, one from Lake Drummond, 5 miles in length, which, in addition to its uses for the purposes of navigation serves as a feeder to the main trunk; and the other 6 miles long, opens a communication between the principal canal, and the head waters of North-West river.

The navigation of the Roanoke, Rivanna and Slate rivers, has been partially improved by means of dams and locks. Companies have been incorporated for the purpose of improving the navigation of the Shenandoah, Catawba, Nottoway, Upper Bannister, Tuckahoe and South Anna, Coal, Smith's, Cowpasture, Goose, North Anna and Pamunkey rivers.

RAILROADS.

The principal works of this description in the state are the Richmond and Fredericksburg, Richmond and Petersburg, and Petersburg and Roanoke railroads, immediately on the line of northern and southern travel through the state, and constituting portions of the great northern and southern line of communication so rapidly progressing to completion between New York and New Orleans. When Virginia shall have completed the railroad between Fredericksburg and the Potomac, and connected the roads at Richmond and Petersburg, she will have done every thing that can reasonably be expected for her in facilitating the traveller on this important line of thoroughfare. A railroad between Washington and the termination of the Richmond and Fredericksburg railroad on the Potomac would still be required to prevent the interruption which now exists, when the Potomac is frozen; but such a work seems to be rather an object of national than of state concern, or at all events one in which the national government, so deeply interested in its execution, may reasonably be expected to co-operate with Virginia towards its construction. The following details in relation to the works above named, will probably be of interest.

Richmond, Fredericksburg and Potomac Railroad. This work lies in Henrico, Caroline and Spottsylvania counties, between Richmond and Fredericksburg. It is 61 miles long, and when extended to the Potomac, at the mouth of Aquia creek, (at which point it is proposed to terminate it,) will be 75 miles long. It has on it several fine bridges at the crossings of the North and South Anna rivers, Little river, and Chickahominy, and will pass the Rappahannock at Fredericksburg by a bridge forty feet high and 600 feet long, and Potomac creek by a bridge three hundred feet in length and seventy feet high. The grades and curves of the road are in general favorable; the sharpest of the latter being about 2000 feet radius, and the maximum graduation, with a single exception near Fredericksburg, (where a grade of forty-five feet was necessary,) being about thirty feet per mile. The execution of the work is, with the exception of the superstructure, highly substantial. The superstructure is of the ordinary wooden rail, plated with iron, in general use in the south, and recommended on this and most other southern roads by the cheapness of timber and motives of economy. When the travel on this road, which is increasing very rapidly, shall have become larger, the company will prodably find it to their advantage to lay down heavy iron rails the whole length of their road. With this addition it would be one of the best, as it promises to be one of the most productive, in the country.

The whole cost of the Richmond and Fre-

dericksburg railroad, including a branch four miles long to the Deep Run coal mines, and including also a full supply of locomotives, cars, &c., has been, between Richmond and Fredericksburg, 1,100,000 dollars. An additional expenditure of 270,000 dollars is estimated as requisite to complete the railroad to the Potomac.

Richmond and Petersburg Railroad. This railroad, 23 miles long, connects the towns of Richmond and Petersburg. Its curves and grades are both highly favorable; a large portion of the line being straight, and the maximum graduation being thirty feet per mile. The railroad bridge across the James river, at Richmond, on this road, is one of the most striking works in America; being about 3,000 feet long, between 60 and 70 feet above the river, and having spans of 150 feet and upwards. The cost of this viaduct was but 125,000 dollars; and the whole cost of the railroad, including depots, locomotive engines, cars, &c., about 750,000 dollars.

A branch of ten miles in length has been proposed from this railroad to Bermuda Hundred, which is said to be of extremely easy execution, and which would probably add so much to the profits of the railroad, and to the commercial facilities of Richmond, that it is a matter of surprise it has not yet been executed. By means of it, produce would be delivered on board European vessels in two hours after leaving the warehouse, instead of being, as at present, delayed a day or two on a circuitous navigation in lighters; and merchants would be able to communicate quickly and constantly with their ships. This slight improvement, and the removal of the Harrison bar, would do much to make Richmond an important seaport.

Petersburg and Roanoke Railroad.—This work, 59 miles long, extends from Petersburg through the counties of Dinwiddie, Sussex and Greensville, to the Roanoke river, opposite Weldon. Near its termination it connects with the Wilmington and Raleigh railroad in North Carolina; and it is connected by means of the Greensville railroad with the Raleigh and Gaston railroad at Gaston. This railroad has on it no curve, after leaving Petersburg, of less radius than half a mile; and no grade, except at that point, exceeding 30 feet per mile. Like the Richmond and Fredericksburg, and Richmond and Petersburg railroad, its roadway, formation, bridges, &c., are executed in a highly substantial and permanent manner; but it has only a plate rail superstructure, which, with the increasing business of the road, it will probably be advisable to substitute by a substantial and heavy iron rail. The whole cost of this railroad, including depots, locomotive engines, cars, &c., has been only 800,000 dollars. By this railroad a large portion of the produce of the Roanoke valley is coveyed to Petersburg.

Besides the above railroads on the great northern and southern line of travel through Virginia, there are the following:

The Greensville Railroad.—This railroad, as above observed, connects the Petersburg and Roanoke with the Raleigh and Gaston railroad. It leaves the former railroad a few miles south of Hicksford, in Greensville county, Va., and terminates at Gaston in North Carolina, where the Raleigh and Gaston railroad commences. It is 18 miles long, and cost about 250,000. Its construction is similar to that of the Petersburg and Roanoke railroad.

City Point Railroad.—This railroad extends from Petersburg along or near the Appomatox to City Point, below the junction of that stream with the James river. It is twelve miles long, and has cost about 200,000 dollars. By means of it an important facility is afforded to the shipping interests of Petersburg, which have hitherto been dependent on lighters on the Appomattox.

Chesterfield Railroad.—This railroad connects the bituminous coal basin of Chesterfield county with the tide water of James river at Manchester, opposite Richmond. Length 13,50 miles, with branches from the main line to the principal coal pits. The line descends into the valley of ——— Falling creek by a self acting plane, and is conducted over that of Sally's Run by an embankment 800 feet long and 40 feet high. Cost but 8,000 dollars per mile. Radius of the curves 1,442 feet. Single track, with the usual turn-outs, &c.; commenced January, 1830, completed July, 1831.

Louisa Railroad.—This railroad leaves the Richmond and Fredericksburg railroad about 24 miles from Richmond and 37 from Fredericksburg, and extends thence westward to Gordonsville in Orange county, passing by Louisa courthouse and Newark. Whole distance from the point of junction with the Richmond and Fredericksburg railroad to Gordonsville, 49 miles. Cost about $400,000.

The Louisa railroad furnishes an outlet to the productions of a fertile tract of country in Virginia at the foot of the Southwest mountain, and forms the most convenient and agreeable route to travellers to the Virginia springs, and the western part of Virginia. It is proposed to extend a branch of the road from Newark about 12 miles east of Gordonsville to Charlottesville, and an extension of the road to Harrisburg, in Rockingham county, is spoken of.

Portsmouth and Roanoke Railroad.—This railroad commences at Portsmouth, opposite Norfolk, and proceeds in a W. S. W. direction through Norfolk, Northampton and Southampton counties, crosses the North Carolina boundary near Meherrin river, and joins the Roanoke near Weldon. Length 80 miles. Cost about 1,000,000 dollars.

Winchester and Potomac railroad extends southwest from Harper's Ferry on the Potomac, in Jefferson county, Va., where it connects with the Baltimore and Ohio railroad, to Winchester in Frederick county. Length 32 miles. Cost 500,000 dollars. From Winchester a macadamized road is now under construction to Staunton; but it is probable that this will ere long be superseded by a railroad, which would be so well justified along the fertile valley of Virginia, remarkable for both its mineral and agricultural wealth. A company for the construction of this railroad was incorporated by the legislature of Virginia a few years since, and a survey made, and very favorable location procured for the work; but the capital stock was not made up within the time limited in the charter for the organization of the company.

The above comprises all the railroads yet executed in Virginia. Other highly important works of this description have been projected in that state, which will probably be undertaken as soon as the present monetary difficulties pass off. One of the most essential seems to be a railroad between

Richmond and Lynchburg, along the ridge dividing the waters of the James and Appomattox rivers, to be extended to connect with the proposed southwestern railroad. Such a railroad would secure to the state a large travel and return trade to the southwest, in light and valuable packages, which, without it, will probably not pass through the state. A second railroad, which would add largely to the wealth of the country through which it would pass, and to the commerce of Richmond, has been surveyed, diverging from the former in the neighborhood of Farmville, and passing in a southwesterly direction to the valleys of the Staunton and Dan rivers, a short distance above the junction of those streams. With her great western and southwestern improvements carried out, and these two lines of railroad, Virginia might again take rank among the foremost state of the confederacy.

Aggregate length of canals in Virginia, 196.25 miles
do. do. railroads do. 361 50 do.

RETARDING THE HATCHING OF EGGS, CAUSES OF SICKNESS AND DEATH OF WORMS, DURING THE SUMMER OF 1840, &c.

From the Journal of the American Silk Society.

This is a most important subject, and the writer of this article feels the responsibility of the task he has undertaken most sensibly. Scarcely less than the success or failure of the great enterprise of introducing the culture of silk in the United States, depends upon it. In all parts of the country the early broods of silk worms, that were known to have been produced from good eggs, were successfully carried through their various stages, and produced good crops of cocoons. It is believed that all the exceptions to such a result were fairly attributable to defective eggs, or to attempts at premature hatching. As remarked by our correspondent, 'P.' in the present number, this success was attained even in cases 'where almost every rule of good management had been disregarded.' But in a great majority of cases the later broods have utterly failed. These failures have not been confined to the tide water regions of the south, to the middle states, nor to the west, but in all parts, at the north, south, east and west, the people have been equally unsuccessful with the later broods of worms. The *symptoms* and character of one variety of the diseases by which they were carried off are well described by 'P.' Others say their's were carried off by the yellows, and others by all sorts of diseases mixed—some worms dying of the yellows, some by the tripes, &c. &c. All who have had late broods, however, will have seen enough of the diseases without wishing further information on that score. A knowledge of the cause of the diseases is what is now wanting, and it is the object of this paper to point them out; whether this task shall have been successfully performed or not, remains to be seen.

One cause of the diseases of the late broods, undoubtedly was the improper mode adopted for retarding the hatching. The eggs were kept exposed to various temperatures till the germ had commenced forming, and even until some few were hatched, and then put into ice-houses, to retard their hatching. This unquestionably either killed all the eggs thus treated, or so chilled the germs as to weaken the constitutions of the worms, and thus make them subject to the various diseases at some period of their lives. The writer of this paper was personally acquainted with several instances of failure from this cause.

Another cause was clearly traceable to the *sudden exposure* of eggs, properly kept previously in ice, to the extreme warm weather of midsummer. This destroys many eggs.

Another was the placing of good eggs in ice after they had been exposed several days on their passage from one place to another, during warm weather.

It would appear that the exercise of a little common sense would effectually prevent injury from any of the above causes. The directions for keeping eggs are plainly descriptive of the simple process. They must be kept during the warm weather of the season they are laid, in a cool, dry place, a cellar, if possible; if intended to be retarded, they must be placed in the ice-house or cellar, at least in the forepart of winter, and not left exposed till the warm weather of the latter part of winter and spring shall have started the germ. If the eggs shall have been kept in ice, they should be exposed gradually to the natural temperature of the atmosphere. After eggs have been kept in ice, and then exposed to a warm atmosphere for any length of time, say more than a few hours, they must not be put in ice again.

But the great cause of most of our disasters, it is believed, has never been suspected—at least the writer of this paper is not aware of its having been noticed by any writer. Neither can he prove to demonstration that it is the great cause, or any cause at all, of disease in silk worms; but he expects to be able to satisfy all inquiring minds at least of its great probability. The silk worm, when left to itself, exposed to the ordinary atmosphere, hatches in the spring of the year exactly at the time the mulberry leaves open. It is therefore an annual insect, and requires exactly twelve months to pass through the various stages of its existence. If for example a silk worm was hatched on the first day of May, 1840, the eggs that it would produce would naturally hatch on the first day of May, 1841. That it is by no means unreasonable to suppose the existence of such precision of periodical developement in silk worms, we may be satisfied by reference to the habits of various other insects and animals. The American locust requires exactly seventeen years to perform its circle of existence, as has been clearly proved. The swallow martin makes it appearance in its usual haunts nearly, if not exactly, on the same day of every year. But we will not consume time in reasoning on the subject—believing the reasonableness of the assumption to be sufficiently apparent. If we admit this position, we shall then have arrived at the point desired, which is that we cannot retard or delay the hatching of the worms, for any considerable length of time beyond their natural period, without doing violence more or less to the constitution of the insect; and the longer we do retard the hatching beyond this period, the more injury we do the worm, until we accomplish its death in the egg. Here we shall be met with the case of the Messrs. Carson, who retarded the hatching of a box of eggs from 1837 to 1839; and by various other instances of re-

tarding eggs for short periods; all which have been duly considered and will be noticed in their proper place—suffice it to say here, none of those cases have been found to be insuperable objections to the position above assumed.

The great cause of disease and death in the late broods of silk worms, then, we consider to have been the attempt by means of very low temperatures, to protract the hatching of the eggs too long. For example, eggs that would in the natural temperature of the atmosphere have hatched on the first day of May, were protracted in their hatching till the first of July, and consequently the germs in the eggs were either killed or so weakened, that disease and death followed sooner or later after they hatched. That the extreme low temperature of the ice-house did any injury independent of that inflicted by the protraction of hatching, we do not believe. We have had sufficient proof of the contrary. It appears to us that the simple prolongation of the time that the insect remained in the egg, caused all the injury. We know that very little if any injury will be done by retarding the hatching one month, and we know that exposure to warmth will accelerate the hatching about the same time. We also know that a good cool, dry cellar, will retard the hatching of the eggs one month, and therefore, if our views be correct, no ice-house will be necessary to the keeping of eggs in any part of the country. The remedy, therefore, for the great evil complained of, is apparent, and we now proceed to it.

Assuming the above position to be correct, if we wish to hatch out a brood of worms on the first day of each month, say first of May, June, July and August, all we have to do is to use eggs produced last year from worms that were hatched at those periods respectively. To accomplish this, we must mark each lot of eggs with the date at which the worms that produced them were hatched, and when we bring them out for hatching, take those whose date corresponds with the time we bring them out to hatch. For example, on the 1st of July, 1841, we bring out a lot of eggs to hatch; we therefore take those marked 1st of July, 1840, and so on with the various parcels. To enable us to accomplish this, that is, to get possession of eggs of these various periods, it will only be necessary to protract the natural hatchings about one month each year. Say we have only one parcel of eggs, and they were produced from worms hatched at the natural period in the spring. We will hatch half of them at the natural period, and protract the other half by keeping them in the cellar one month, bringing them out to hatch on the 1st of June. We mark the eggs produced by both these parcels of worms, the one '1st of May,' the other '1st of June.' Next year, we take the eggs marked 1st of June, hatch half of them according to their date, and protract the other half to 1st of July. The year after we take those marked 1st of July, hatch half of them, and protract the other half till the first of August. This system will supply us with eggs for hatching during the whole season, without injury to the eggs or the worms. If it be desired to have hatchings every two weeks, either of the two parcels with dates nearest the intermediate periods, will be proper for use.

We shall now proceed to state some facts in illustration of the above theory, and which have suggested to us these views. A gentleman in Delaware, last year produced one of the finest parcels of eggs we ever saw. He placed them in the ice-house in the winter, where they remained till the last of May, when he sent them to us. He packed them in a box of ice, while in the ice-house, in which box they came to us and were put in our refrigerator, without any exposure to the warm atmosphere. These eggs we sent to different parts of the union in small parcels, from the 1st of June to the 23d of July. The first parcels we sent away, hatched in from ten to thirteen days from the time they left us. But the time after leaving our refrigerator until they hatched, became gradually shorter until the 23d of July, when they hatched in 24 to 30 hours. We heard of nearly all the parcels we sent away, and nearly all did unusually well; the exceptions were the two or three last parcels sent off, and one of the last parcels was a failure, the worms were weakly, became sickly, and as they approached spinning, sickened and died of various diseases. Every rule of good management was observed, and various remedies resorted to without avail. One lot of the same eggs was sent to a gentleman in Virginia, on the 20th of June. By some accident the letter was delayed on its passage in the mail *twenty-one days*, so that he did not receive the eggs till the 11th of July. They were all hatched, of course, and many of them dead. How long they had been hatched, can of course only be conjectured. Other parcels we know hatched in ten days after leaving us; but we cannot conceive of the ability of the young worms to sustain life eleven days without food. However, the gentleman immediately spread them out on his tables, and gave them leaves, which all that were alive commenced eating greedily. The result was, he gathered 3000 of the finest cocoons he ever saw. During the whole period of their feeding, he did not lose a dozen—having had no diseases among them. We ought to have stated that we sent him half an ounce of eggs. This fact proves of itself the good quality of the eggs at the time we sent them; if it did not, we could adduce abundance of other testimony; that is, they were *good* on the 20th June. The other fact stated above, proves that they were *not good* on the 23d of July. If the mere retarding their hatching was not the cause of their bad quality in July, what was? The worms that produced these eggs were hatched, or commenced hatching, on the 20th of May, last year. These facts, we think, go far to establish the correctness of our views as above given, that the eggs of worms that were hatched on the 20th of May, 1839, would naturally have hatched on the 20th of May, 1840, but were capable of being retarded in hatching till the 20th of June, without injury; that when retarded to a later period, they suffered more or less in proportion to the length of time they were so retarded.

We have several other facts that correspond precisely with the above in all parts, both as to attending circumstances and results, but we deem it useless to waste time and room in stating them, as they could only prove that we have not made up our opinion upon the evidence of a single isolated fact, and this we hope it is not necessary to prove.

If the above theory be correct, it is easy to account for most of the failures that have occurred in

our country during this summer. Eggs that ought to have been hatched in May, were protracted perhaps till July, and eggs that ought to have been hatched in July were attempted to be hatched in May, and both were killed or badly injured; for it must be borne in mind that *protraction* of the hatching of eggs is not alone the cause of failure. Many persons have failed from an opposite course. Eggs that were produced by worms hatched in August, were attempted to be hatched in May and June. They were exposed in the ordinary way, a few scattering worms came out, as is always the case even the first season, and no more hatched. The temperature was raised, but no effect was produced, other than perhaps destroying the eggs, and they were finally given up as bad eggs that would not hatch at all. The fact was, the eggs had not passed the time required for their maturity, and therefore, would not of course hatch until late in July or August. We hope to be able to illustrate this part of our new theory before this paper goes to press, with the statement of a most interesting fact in point.

The instance of retarding eggs from 1837 to 1839, by the Messrs. Carson, of Lancaster, Pa., and on which nearly the whole practice of protracting by means of ice-houses has been founded, is certainly the most powerful argument that can be brought against our present position. We do not, however, consider one instance of success as conclusive, against so many as have been adduced this season of an opposite character. It cannot now be known at what time in the summer of 1837 the worms were hatched that produced the box of eggs in question. In answer to our inquiry on that point the Messrs. Carson say, 'they were hatched *about the middle of the season*, we cannot speak positively, as to the time. Brother Thomas, since deceased, attended to the silk business entirely at that time.' The eggs may have been produced late in the season of 1837, and having been placed in the ice-house and remaining there steadily they would not of course hatch till very late in the season of 1838, or until the common temperature of the atmosphere was too low to hatch them, and thus they passed over the entire year of 1838, and hatched in 1839. We have entire confidence in any statement made by the Messrs. Carson; but may we not be permitted to suggest the possibility of a mistake having been made in supposing the box of eggs found in the ice-house to contain eggs of the produce of 1837, when in fact they were the product of 1838? In their letter giving an account of the affair they say the eggs 'were deposited in the ice-house in the fall of 1837 with the intention of feeding them in the summer of 1838, but were *overlooked*, and *our attention was not drawn to them until it became necessary to fill the ice-house again* when the box was found with about 30,000 mammoth white silk worm eggs.' Now as these eggs had escaped their recollection from the fall of 1837 to the winter of 1838, may it not have been possible that they were in fact the produce of 1838? At all events, except that of the Messrs. Carson, every attempt that we have heard of, and they amount to hundreds, to keep eggs from hatching later than a month or so after the natural time of hatching, has proved a failure.

The Rev. Mr. McLean in his statement in the November number of 1839, does not state at what time in 1838 he produced his eggs. If he produced them from worms hatched as late as the middle of July, 1838, then his statement will be corroborative of our theory; if the worms were hatched earlier than July, it is evidence against it. It will be recollected that his worms in 1839 were hatched on the 31st July, August 19th, and August 27th, his eggs of the previous year having been kept in ice till the time of hatching.

The above are our views on this momentous subject. It will be seen that they are in direct conflict with views even recently entertained by us. They are, however, perfectly coincident with our opinion formerly and for the first ten years of our experience, when we most carefully examined into the whole affair. It is in the recollection of all our friends, that until the accidental experiment of the Messrs. Carson, and that of Mr. McLean, we had no confidence in our ability to produce successive broods of silk worms during the entire season, and that we were induced by those experiments and some others to change our opinion. (We always objected to 'two-crop worms,' and it must be remembered that they have not been taken into view at all in any of these remarks.) We now believe we were right in our old opinion, so far at least as is stated in the preceding pages.

It is to be understood that the failures treated of in the above paper, are those only in which the worms had been properly treated, and in which the original stock of eggs was unquestionably good. It is not to be inferred that success in retarding the eggs will of itself ensure success in the result of the crop. The worms must have, besides perfection in the eggs at the time of hatching, all proper management, such as proper food, plenty of shelf-room, cleanliness, and above all, free and pure air.

In conclusion—we shall watch this most interesting subject closely; shall collect all the information possible; and shall lay the result before our readers, in the course of the present year.

We must be permitted to make one more suggestion, which seems to be called for by the above theory, and that is, that all persons in purchasing eggs should be informed precisely of the time when the worms were hatched that produced them. It will readily be perceived that, if our views as above expressed be correct, this information is absolutely necessary. For example: we want eggs next year to hatch in July, we shall of course purchase those produced this year from worms hatched in July. All who produce their own eggs can of course mark them for themselves; and those who sell them should also do so. The well known necessity of *good health* in the original stock will of course not be overlooked. G. B. S.

CLEANING CLOVER SEED.

From the New Genesee Farmer.

Messrs. Editors.—In your paper for this month, I read an inquiry from a Canadian correspondent, (S.) as to the method of cleaning clover seed.—Now, to pen an accurate description of a clover machine would require too much room, as well as a much abler pen than mine. Nevertheless, I will use my best efforts for the benefit of your readers, it being a request from you to your correspondents generally.

The first process is separating the heads from the straw.—This is done by thrashing it with a flail, in the usual manner of thrashing grain, which can be done with comparative little labor, in cold winter weather.

The second process is separating the seed from the hull or chaff.—The machine necessary for this purpose is similar to a small sized thrashing machine, except that the cylinder and concave are covered with heavy sheet iron, which is punched with a round and sharp punch, so as not to cut the piece out where it goes through; but leave the edges sharp and ragged on the under side. This is nailed on to the cylinder with the rough side outwards, and the concave, similarly punched, is nailed on with the rough side inwards. These are set so close together, that a few of the longest teeth (as they are called) will touch until it has been used for a while.

The heads or chaff, as it is often called, are fed into the machine through a hopper, which extends the whole length of the cylinder, and is secured over the cylinder, so that not more than one-third of the width or diameter of the cylinder is visible through the mouth of the hopper, which is formed with the ends perpendicular, and the sides spreading not more than half as much as the hopper of a common fanning mill.

The manner of driving this machine, as well as the size of it, must depend on the power by which it is to be driven.

The third process is cleaning the seed when so separated.—Any ordinary fanning mill will answer this purpose. First, close the side doors which regulate the current of air; then take out all sieves but the coarse chaff and the wheat sieves; then put a thin board in the place of the sloping or chess sieve, so as to prevent the seed from going into the chess box, and also remember to put the wheat sieve into the lowest sliding place, so as to break the fall of the seed on the sloping board; then turn rather slowly and feed slowly.

It will be found on examination, that a part of the chaff, (that part lying next the mill,) has yet some seed in it; this must go through the machine again, and we have sometimes to put a portion through a third time.

When this is accomplished, the seed will be separated from the chaff, dirt, &c.; but in order to make it fit for sowing, or for market, it must be cleaned similar to timothy, turnip, or other small seeds. For this purpose it is necessary to have, instead of the wheat sieve, one finer than the sloping or chess sieve; the material for which can be procured at any of the hardware stores--and the wheat sieve must be substituted for the coarse or chaffing sieve.

I have briefly stated the method used in this neighborhood; and although but imperfectly described, it can, I think, be comprehended by any man of ordinary mechanical powers.

Yours, &c., W. N. H.

Yates Co. August, 1840.

IMPORTANCE OF PROTECTING BIRDS.

From the New England Farmer.

Mr. Breck—In my communication on the origin of the borer and my mode of extracting them, I spoke of a narrow gouge as being the best instrument with which I was acquainted for this purpose. The remarks you made in relation to it, saying that "the bill and long tongue of the little speckled woodpecker were quite as effectual," have induced me to send another communication—not that I dissent, but to say that I fully concur with you. I believe from what I have seen and known by experience in farming, that if sportsmen were treated as they ought to be, encroaching as they do upon the public rights, the interest of the agriculturist would be greatly promoted: the birds no longer frightened away from our habitations, would congregate in our orchards and gardens, and rear their young in our midst, and the husbandman might fold up his hands in complacency, for aught that could injure him in the shape of a worm or insect. Nor is this all: we should not only have our trees and gardens freed from insects, but music, sweet music would be heard from every 'bush and tree;' and who is there that does not like to hear the songs of the feathered tribe? Surely if ever there was music that was intended by the Deity to cheer the drooping heart of the farmer and impart joy and happiness, it is the music of the songsters of the grove. How often as he goes out in the morning to engage in the toils of the field, is his heart made glad by the joyful notes that burst from every quarter upon his ear, and sympathizing with the charming sounds, he goes whistling or singing to the plough, rejoicing in Him who created all and pronounced his works very good. Now who would alter this wise and merciful provision of Providence? None! none! unless it is the mean, base, low-lived, loafing sportsman—a set of scamps destitute of all moral restraint, who now are, and always have been, a nuisance to all good society.

But again: having our trees secured from the vermin which infest them, and the pleasure we derive in listening to their sweet music, are not all the benefits which we derive from the protection of birds. No—other advantages are numerous, and I presume my employer will not be affronted if I mention one which will result to him in this respect. During the whole time he has been a resident of the place he now occupies, he has never in the least manner discouraged the coming of birds upon his farm and garden by shooting them himself or allowing others to do so: and not even in the time of cherries, when it is customary to put up something in the tree to frighten them away, has he done it; but always allowed them to come and get what they pleased; consequently his trees are not so much infested with insects as his neighbors', and what is worthy of notice, the birds have planted the cherry stones in the grove and about the farm so liberally, that I have no doubt but what three hundred English cherry seedlings may be found upon the place of all sizes. These trees my employer intends to have taken up soon, and put in a convenient place for sale, which if disposed of at the common price, will bring a good round sum—more money than was ever gained in preventing the birds from eating a few cherries, that the owner might sell the more, without saying any thing of the many insects which the birds would destroy in the mean time.

The increase of insects is not only a sure result of killing the birds, but how often have I seen the sportsman discharge his gun into the small branches of the tree, stripping leaves, buds and bark en-

tirely off, and oftentimes cutting off quite a number of the fruit. Cannot and shall not these things be prevented? There is a law to prevent our property from being injured, and if a man injures our trees by shooting into them, ought he not to suffer the penalties of this law? Surely he had, and that too with a double force; but who has ever yet prosecuted a man for shootings birds in his orchards? has it been done by any man? if so he deserves the praise and good wishes of every farmer. If it has not been done, if we have patiently submitted to this outrage upon our property in times past, let us resolve we will do it no longer—let us (the farmers) awake to this subject and say it shall be so no more, and exert ourselves to put a stop to such gross insult and abuse. If you order the sportsman off your premises, he is affronted and thinks he is doing no harm. What strange ideas some men have of property at the present day, to think they may do what they please upon their neighbors' grounds. Would they be pleased to have their own premises thus invaded and their property destroyed? We think not. They know they do wrong, or they would not run away at the approach of the owner. We concur with your friend in considering "the person who destroys the birds on his premises, in the same light as though he robbed his purse."

For one I hope there will be more interest taken in the preservation of birds, so that the time may soon come when they shall become our familiar friends, and feel that we are their protectors rather than enemies.

Yours, &c.

J. M. HARTWELL.

Medford, Mass., Aug. 25th, 1840.

THE NOVEL ARTIFICIAL WATER POWER, CONSTRUCTED BY THE SHAKERS OF CANTERBURY.

From the Farmer's Monthly Visitor.

Our next object of attention was the artificial water-power created by the first family at an almost incredible amount of labor and expense. The Shaker village is situated at the high point near the sources of the Soucook river running into the Merrimack from the north-east, and above the mill seats found upon the stream. Here, where no natural stream ever ran, they have created a more permanent and durable water-power than can be found within the distance of ten miles. To make this water-power effective in the dry as well as in wet seasons, no less than eight artificial ponds covering from five to thirty acres each have been created, one rising above the other, and each furnishing a stream large enough to carry different mills and factories. To feed the stream with a constant supply of water there was not at first any considerable stream or body of water. It was commenced by damming around a small meadow in which the melting of the snow in the spring caused the water to collect. Other reservoirs created in the same way succeeded to the first; until a permanent and highly valuable water-power was completed by the purchase of a considerable swamp or morass up-hill at the distance of nearly two miles, which was dammed up to retain the water in the same manner, and from which a trench or ditch through the rough stony ground was formed for the whole distance. The dams which constitute in some instances two sides and nearly half of a reservoir have been made by a prodigious labor in collecting and arranging stones and gravel. It being found that the water would ooze through the natural ground, that has been dug up to give place to other materials, as gravelly clay and rocks, which should make the dam water-tight.

The immense work done to create this artificial water-power, being at a distance from any travelled road and from the villages of the Shakers, has probably never attracted the attention of a hundred persons who have viewed and estimated its magnitude. We know nothing of the kind effected by individual enterprise any where within the limits of the state. It is true there are works connected with the water-power of factory establishments that have cost more money; but there are none where such labor has been performed, and such expense incurred merely for the purpose of the individual domestic convenience of those performing the labor.

At the lower point upon this artificial stream is,

1. A building 35 by 50 feet and two stories, containing apparatus and machinery for carding wool.

2. A building with a machine for sawing wood. At this place, being near an extensive and beautiful woodlot, the fuel used by the family is prepared, being sawed and split of that size which is most effective in imparting heat. With stoves of their own invention and construction, with rooms fully finished, the brethren obtain double the effect from half the quantity of fuel generally consumed. In the preparation there is not a particle of wood wasted; for even the finest saw-dust is carefully preserved for use.

3. Rising to the outlet of the third pond from the foot is an extensive building eighty feet by forty and three stories high—a building framed of stouter timber than is often found in the largest structures. This building covers a grist-mill with four runs of stones, of which is one set of burrs for the manufacture of flour. This mill is visited by customers ten, fifteen and twenty miles distant, who are unable to find another so good; and it is remarkable that the Shaker stream made upon the dry land fails not for water, when others upon running natural streams give over their customers in time of drought.

Under the same roof and moved by the same wheel is a mill for sawing common boards from logs—a circular saw for slitting—a machine for sawing pail staves—a mill for grinding malt—also, a shop for manufacturing measures, as half bushels, pecks, &c.

The great wheel which moves the machinery of this building is thirty-four feet in diameter, and the space in which its under part traverses is drilled out of the solid rock some eighteen or twenty feet deep, of twice that length, and some twelve to fifteen feet in width.

The dust of the several saw-mills falls directly to a basement into which, on the opening of doors, cart and oxen are backed to carry it away for the profitable uses to which it is applied: the surface slabs of the sawed lumber are all preserved for fuel or some other economical purpose, so that no fragment on the premises of the brethren is left to be wasted.

The expense laid out in constructing the buildings and machinery of the third building, with the economical expenditure of the Shakers, exceeded ten thousand dollars, without taking into the calculation any part of the cost of the artificial water-power. Levi Stevens, who has the personal charge of this building, a man of about sixty years, is known for some ten or fifteen miles round as probably the best miller in the county of Merrimack.

4. The fourth building above on the stream, erected before the mills below, is forty by thirty feet, used as a factory for various purposes. In this building, when visiting the Shakers on a week day, we have always found the venerable Francis Winkley at work. He is eighty-two years of age, and served his time as an apprentice at the smithing business at Dover, N. H., about sixty years ago. He commenced with the Shakers between fifty and sixty years since, and in that time has manufactured with his own hand twelve thousand iron candle-sticks. He has been for many years the efficient financial manager of the whole establishment, and in that management has discovered talents which might have qualified him as an efficient head of almost any government.

The machinery of this fourth building is of an age of twenty years. Here the Shakers have made the improved pails which have been so much used and admired throughout New England for their perfection and durability. The second family has likewise a pail manufactory recently erected on a small stream running through their premises, made after the fashion of more recent inventions; but the first family continue to make their pails now as they made them with the machinery of water-power twenty years ago; and they think their old labor-saving invention to be nearly if not quite as good as the new method which has been adopted in several manufacturing towns of the interior. The water-power of this building is also used for various other economical purposes; among them was a cannon ball in a mortar turned for the purpose of pulverizing barks and medical roots—a machine for polishing metals, and machines for turning and boring.

5. The fifth building upon the stream was the clothing works, where the beautiful woollen cloths and flannels manufactured by the sisters are fulled and dressed. Here were samples of all wool, mixed worsted and cotton cloths that would have done credit to the best modern manufacturing establishments. Calvin Goodale had the charge of this clothing establishment; he was educated to the business here. He made use of teasels in raising the nap upon the cloth; and he exhibited to us a specimen of that article which he had improved by the selection of the seed, the points of the pricks being turned so as to strike the surface of the cloth in the best direction, and the head being a perfect cylinder instead of a cylinder split in the middle of half the size. From repeated observation, we do not doubt that many vegetables have been and may be perfected and improved in shape, size and quality by attention in the selection of seeds, in the preparation of the soil and the care of cultivation.

6. The sixth building on the stream covered a tannery and bark-mill in the basement story, and a mill for the manufacture of shingles and a thrashing machine room. The last machine was an invention of the shakers and had been used by them for thrashing their grain for more than twenty years. The old machinery and gearing of this mill had been just taken down, and a self-acting arm, or wheel made of tubes of cast-iron—a recent invention—had been procured to supply their place. The head and fall at this mill is fifteen feet; the water is forced into the iron tubes which revolve under the surface of the water. A small quantity of water pressing continually from above is only requisite; and where there is little head and fall the wheel works well with abundance of water. The tube-wheels are thought to be a great improvement where they have been used. The works at this mill were constructing under the immediate direction of Elijah Brown, who had derived his mechanical knowledge with the Shakers, and was both tanner and mill-wright. The mill was not only undergoing an entire change in the application of the water-power to a different wheel, but a more copious water-channel was constructing through the hard rocks.

OKRA SOUP.

From the Southern Agriculturist.

Take one peck of okra pods, which must be very tender, cut them across into very thin slices, not exceeding one-eighth of an inch in thickness, but as much thinner as possible, as the operation is accelerated by their thinness. To this quantity of okra, add about one third of a peck of tomatoes, which are first peeled and cut into pieces. This quantity can be either increased or diminished, as may suit the taste of those for whom it is intended. A coarse piece of beef (a shin is generally made use of) is placed in a digester with about 2½ gallons of water, and a very small quantity of salt. It is permitted to boil for a few moments, when the scum is taken off and the okra and tomatoes thrown in. These are all the ingredients absolutely necessary, and the soup made is remarkably fine; we, however, usually add some corn, cut off from the tender roasting ears, (the grains of three ears will be enough for the above quantity)—we sometimes add about a half pint of Lima or Civie beans—both of these improve the soup, but not so much as to make them indispensable—so far from it, that few add them. The most material thing to be attended to is the boiling, and the excellency of the soup depends almost entirely on this being faithfully done; for if it be not enough, however well the ingredients may have been selected, the soup will be very inferior, and give little idea of the delightful flavor it possesses when properly done. I have already directed that the ingredients be placed in a digester. This is decidedly the best vessel for boiling this or any other soup in, but should there be no digester, then an earthenware pot should be preferable, but on no account make use of an iron one, as it would turn the whole soup perfectly black. The proper color being green, colored with the rich yellow of the tomatoes. The time which is usually occupied in boiling okra soup is *five hours*—we put it on at 9 A. M. and take it off about 2 P. M., during the whole of which time it is kept briskly boiling, the cook at the same time stirring it frequently and mashing the different ingredients. By the

time it is taken off it will be reduced to about one half; but as on the operation of the boiling being well and faithfully executed depends its goodness, (as I have already remarked,) I will state the criterion by which this is judged of. The meat separates entirely from the bone, being 'done to rags,' the whole appears as one homogeneous mass, in which none of the ingredients are seen distinct—the object of this long boiling being thus to incorporate them—its consistency should be about that of thick porridge."

PROTRACTED VITALITY OF SEEDS.

From the Hartford Courant.

Without admitting such doubtful cases as those of seeds preserved in mummies having germinated, there are many instances of seminal longevity about which there can be no doubt. Books contain an abundance of instances of plants having suddenly sprung up from the soil obtained from deep excavations, where the seeds must be supposed to have been buried for ages. Professor Henslow says that in the fens of Cambridgeshire, after the surface has been drained and the soil ploughed, large crops of black and white mustard invariably appear. Miller mentions a case of Plantago Psylli having sprung from the soil of an ancient ditch which was emptied at Chelsea, although the plant had never been seen in the memory of man. De Candolle says that M. Gerardia succeeded in raising kidney beans from seeds at least a hundred years old, taken out of the herbarium of Tournefort; and I have myself raised raspberry plants from seeds found in an ancient coffin, in a barrow in Dorsetshire, which seeds, from the coins and other relics met with near them, may be estimated to have been sixteen or seventeen hundred years old.

PERIOD OF GESTATION IN COWS.

From the Southern Cultivator.

One of the most satisfactory experiments relating to the subject, on record, is the one made by Earl Spencer, and the particulars of which are given in the second number of the English Agricultural Society's Journal.

The table given contains the results in the case of seven hundred and sixty-four cows, and the following statements abridged from the paper, will exhibit some of the most important of the details:

First. It appears that the period of gestation varied from 220 days to 313 days; or no less than 90 days. Lord Spencer was, however, unable to rear any calves produced under 242 days. All under 260 days, and over 300, he thinks are decidedly permature, or irregular.

Second. As 314 cows calved before the 284th day, and 310 after the 285th day, the average period of gestation must be considered as between 284 and 285 days; although the time stated in the work on Cattle by the London Society states it at 270 days.

Third. It appears, that omitting those considered as premature or irregular, the cows whose period of gestation did not exceed 286 days, produced 233 cow calves, and of bull calves 234; while from those whose period exceeded 286 days, the cow calves were only 90, and the number of bull calves was 152. This certainly gives some support to the opinion so prevalent among farmers, that when a cow exceeds the usual time, the produce will be a bull calf.

Fourth. There were 7 cases of twin cow calves; 5 cases of twin bull calves; and 11 cases of twin cow and bull calves. Earl Spencer has never had a case in which the sexes were different, in which the heifer was a breeding one; they have uniformly been what are termed *free martins*. The cattle of which the above record has been kept, are the pure improved short horn breed, and one of the finest herds in Great Britain.

THE SHAWL-GOAT IN EUROPE AND AUSTRALIA.

From the Penny Magazine.

The great price paid for a Cashmir shawl has led some enterprising individuals to attempt naturalizing in Europe the animal which produces the wool from which those shawls are made. It was very properly observed, that much of the cost to the European purchaser was attributable to the great distance the article had to be brought, and to the high and arbitrary duties paid upon it, both for manufacturing and transporting. An extract from the journal of a French traveller will show how the matter stands between the producer and the buyer. The wool is first combed from the animal in the mountains of Thibet, where it is sold for nearly five shillings a pound: it is packed in baskets and sent to Cashmir, where it pays a duty on entry. It is there bleached with rice-flour, spun into threads, and taken to the bazaar, where another tax is paid upon it: the thread is then dyed, the shawl is woven, and the border sewed on; but the weaver must not sell his work, he must carry it to the custom-house, where a collector puts on any tax he pleases, and in this he is limited only by the fear of ruining the weaver altogether, and consequently losing any future profit. All the shawls intended for Europe are now packed up and sent to Peshawer across the Indus; this part of the journey is generally performed upon men's backs, for the road is in many parts impassable even for mules, being across deep precipices which must be traversed by swinging bridges of ropes, and perpendicular rocks which are climbed by wooden ladders; at each station of this long traverse, which lasts twenty days, a tax is paid, generally arbitrary, but seldom much exceeding 2*l.* sterling on the whole journey. From this point until they come near the confines of Europe, in addition to the many custom-houses at which they must pay tribute, these unlucky shawls have to encounter the dangers of almost continual anarchy in Afghanistan, and the risk of pillage in Persia by the Turkomans and Kirghiz, whose forbearance must be purchased at a high price. After leaving Persia many shawls get to Europe over the Caucasus and through Russia; but the largest number reach Constantinople through the Turkish provinces, and even then they have a tedious journey to perform before they reach the wearer. Although this statement may not be per-

fectly accurate, the great increase to the original price caused by the route taken is undoubted, and a knowledge of this fact stimulated the exertions of those persons who proposed to breed the shawl-goat in Europe. The animal was not quite unknown. In the 'Penny Magazine' for 1833, an account of one was given from a specimen in the Jardin des Plantes at Paris, which was received from Calcutta, where it had been bred from a couple brought directly from Cashmir. But a whole flock was wanted, not a single individual; and as the attempt to bring any number of these animals by land from such an enormous distance as Thibet was deemed impossible, every inquiry was made as to the probability of getting a supply from some of the wandering pastoral tribes who in their migrations might occasionally touch on the confines of Thibet, and sometimes reach the steppes of Asiatic Russia. Under the French empire, persons were sent to the fair of Macarief (since removed to Nijnei Novgorod) to make inquiries of the Asiatic merchants who annually assembled at that great mart, and they learned there that flocks of Thibet goats were numerous in the steppes of Russia. Although circumstances prevented any steps being taken to procure flocks at the time, the information thus obtained proved very serviceable in directing an expedition which was fitted out several years afterwards for the purpose of purchasing some.

The gentleman selected to take charge of the expedition was Monsieur Jaubert, whose knowledge of the Turkish language and character peculiarly fitted him for travelling through countries peopled by Turkish tribes. Monsieur Jaubert left Paris in April, 1818, and proceeded towards Asia, through Southern Russia, by Odessa, Taganrog, and Astrakhan. On his way he received much information from merchants of Bukharia and Armenia, and ascertained that a handsome race of goats with brilliant white fleeces was to be found among the Kirghiz tribes, who wander in the plains partly surrounded by the great bend of the river Ural or Yaik, which divides Europe from Asia. Samples of the down from these animals were shown him, and he found locks of it scattered here and there in parts of the steppes between Astrakhan and Orenburg, which convinced him that he was in the track of the genuine shawl-goat; this was further corroborated by the designation of *Tibet*, by which name the animal was known to the native tribes. He soon found large flocks of the goats in possession of the Kirghiz, and of them he purchased nearly thirteen hundred, with which he prepared to retrace his steps. The home journey across the plains of Russia appears to have been injudiciously timed; it was begun at the setting in of winter; the goats crossed the Volga at Tsaritsin, nearly 300 miles above Astrakhan, and proceeded to Taganrog, where it was intended to embark them; but, as might have been expected, the sea was frozen, and it was found necessary to drive them on to Caffa, which they reached on the 24th of December, nearly 300 of their number having died by the way of cold and fatigue.

At Caffa the flock was divided into two portions; one of these, consisting of 566 goats, was put on board a Russian vessel, which arrived at Marseilles about the middle of April, 1819; the remainder embarked on board another vessel with Monsieur Jaubert himself, and reached Toulon towards the end of April. No further account has reached us of this latter portion of the flock, but ample details concerning the division which landed at Marseilles has been given by Monsieur Tessier, who was commissioned to receive the animals as soon as they should leave the lazaretto, where they were shut up on landing, according to the quarantine regulations. M. Tessier found the poor creatures in a wretched state; they had been packed together in the hold of the vessel, where no fresh air ever reached them; and the space they had to move in was less than the length of their bodies. This treatment had produced disease in almost all the flock; the hair was dropping from them, and it was found necessary to shear off what remained. They also suffered from convulsions; but the most fatal malady with which they were attacked was a tubercular consumption, from which great numbers perished. A close lazaretto was not calculated to remove the complaint, and many deaths took place daily during the thirty days they were confined. "We have saved but very few," says M. Tessier, "and only such as had slight attacks; the remedy employed was flour of brimstone mixed with their food."

The animals that escaped these multiplied ills were soon removed to more congenial situations; some were placed in the royal bergerie near Perpignan, at the foot of the Pyrenees, some in the hilly country about Toulon, and others farther to the west in the departments near the Rhone. The whole number surviving of both flocks when Monsieur Tessier wrote his account (August) was about 400; they were then generally in good health, their hair had grown to a considerable length, and the valuable down had begun to show itself.

The shawl-goat was thus naturalized, and subsequent experience has shown that the down produced in Europe is not inferior to that of the original Thibet stock. Fears were at first entertained that this could not be the case: it was said that the breed obtained was not pure, that it had degenerated; and a letter from Moorcroft, written in the beginning of 1822, at Ladakh in Thibet, seemed to confirm the suspicion. He says, "France has, I learn, procured a flock from some of the steppes near the Caspian, which must be inferior to those of Thibet, as lately Aga Aabdi was employed by Russia itself to procure the breed from the borders of Chinese Turkestan." But these fears were unfounded. A more serious evil was the small quantity of wool produced by each goat, which on an average amounted to less than three ounces; and the high price paid in Thibet for the raw material proves that the defect is in the original species. Such a small produce precluded all hope of making a profit by rearing the animal, and the scheme would have failed had not the intelligence of an enlightened Frenchman overcome the difficulty. Shortly after the arrival of the Thibet goats in France, several specimens of the Angora goat were brought into that country from Persia; one of these animals, belonging to the Duchess of Berri, was seen in 1822 by Monsieur Polonceau, proprietor of several of the Thibet goats. The length and silkiness of the hair of this goat were extraordinary, and Monsieur Polonceau judged that a cross be-

tween the two races would be an improvement to both: the experiment was tried, and it succeeded beyond his most sanguine expectation. Instead of the minute quantity of three ounces, or even less, several of the mixed race furnished thirty ounces of down in one season, and the average produce of his flock was above sixteen ounces: this was not at the expense of quality; its silkiness was greatly increased, it was finer and longer in the staple, and it had all the peculiar softness of the original stock. It was also found that the mixed race was more robust, more easily fed, and, what was of equal importance, it was less headstrong than the common goat of Europe, and could be managed as easily as a sheep; while at the same time it was active enough to seek food in such steep places as would be inaccessible to sheep.

The great step was now made, and there would be little difficulty in diffusing the improved stock. The unmixed race had already been brought from France into England by Mr. Tower, and located, in 1824, at Weald Hawl, in Essex, where it rapidly increased, and was in every respect like the French parents. In the year 1828 three shawls were made at Paisley of the wool of Mr. Tower's flock; and they were judged by a committee of manufacturers to be superior to any brought from France. But the produce did not increase; it was still barely three ounces, and ten goats were required to furnish wool enough for a shawl of a yard and a half square. Englishmen therefore began to turn their attention to the mixed race; but the importance of wool to our Australian colonies, and the very great improvement which has been invariably produced in the fleeces of sheep exported thither, naturally induced speculation in that quarter. Mr. Riley, an enterprising proprietor of New South Wales, saw Mr. Ternaux's flock of pure Thibet goats at St. Ouen in 1828, but the small quantity of their produce deterred him from attempting so long a voyage with so little prospect of advantage. He was then recommended to visit the crossed race of Monsieur Polonceau at Versailles, which he did, and was at once convinced of its superiority: he was very anxious to purchase some of them, but the desire of Monsieur Polonceau to increase his stock, and to continue his experiments on a large scale, made that gentleman unwilling to part with any. Mr. Riley was consequently compelled to defer the execution of his object until his next voyage to Europe, which was at the close of 1831. He then visited Monsieur Polonceau again, found his stock greatly increased, and his expectations fully answered. He prevailed on that gentleman to sell him ten females and three males, all of which he conveyed safely to London. We regret we are unable to furnish the result of Mr. Riley's endeavors. The last account we have seen is a letter dated London, March, 1832, written to the Society of Arts by Mr. Riley, who had returned from France with his little flock, and was then carefully preparing them for their voyage. At that time some of the females had produced young, which was the seventh generation from the original cross. The Society presented Mr. Riley with their gold medal for his valuable endeavors.

The crossed race, like the pure stock, begins to show a little down early in September, and sheds it spontaneously in March; it is therefore evidently a provision against the cold of winter, which in Thibet, as in Europe, extends from September to March. In New South Wales these are the summer months, and it would be interesting to ascertain whether the goats will continue to produce their warm covering at the accustomed time, or if they will change their habits with the climate. Possibly, like some flowers brought from the northern to the southern hemisphere, or *vice versâ*, they may for a few seasons continue their primitive habit, and then suddenly change it; or the old ones may continue the original habit, and those born in the southern hemisphere adopt the one congenial to their new abode. In any case there is little doubt that the shawl-goat will be a valuable addition to the stock of the colony.

ORCHARD DESTROYED BY CANKER WORMS.

From the Hartford Courant.

The orchard of Mr. Jabez Giddings, of Rocky Hill, has been overrun with worms for seven years —and is now entirely killed; so that he has determined to cut it down. Thus he has, by these insects, been deprived of seven years' fruit, and finally of a fine orchard,—which he is now under the necessity of clearing off—all for the want of a little care and labor. By spending an hour per day for six months in the year, and $1 per annum for tar, an orchard of 50 trees might be preserved. The expense of this operation would not be more than $20 per annum to any farmer, and most of them would perform it with their own hands, without being felt. The result would be the preservation of the trees, plenty of fruit for family use, and a surplus that would bring at least $50 a year in the Hartford market. The fruit used at home is a full compensation for carrying the remainder to market. According to this calculation, the balance, in 7 years, is $210 loss, besides interest. But an orchard that produces an annual income of $30, is as good as $500 at interest—this being added, makes Mr. G.'s total loss from neglect, over and above all necessary expenses for preservation, not less than $750—or on an average of $107 per annum—more than $2 a year for each tree suffered to be overrun by canker worms.

POULTRY.

From the New England Farmer.

When, says M. Bosc, it is wished to have eggs during the cold season, even in the dead of winter, it is necessary to make the fowls roost over an oven, in the stable, in a shed where many cattle are kept, or to erect a stove in the fowl house on purpose. By such methods, the farmers of Auge have chickens fit for the table in the month of April—a period when they are only beginning to be hatched in the farms around Paris, although further to the south. It would be desirable that stoves in fowl houses were more commonly known near great towns, where luxury grudges no expense for the convenience of having fresh eggs."

ANTIDOTE AGAINST MICE.

From the New England Farmer.

Mr. M'Donald, of Scalps, in the Hebrides, having some time ago suffered considerably by mice, put at the bottom, near the centre, and top of each of his stacks of grain, as they were raised, three or four stalks of wild mint with the leaves on, gathered near a brook in a neighboring field, and never after had any of his grain consumed. He then tried the same experiment with his cheese, and articles kept in store, and with equal effect, by laying a few leaves, green or dry, on the articles to be preserved.

WHEAT CULTURE.

From the Cultivator.

Of all the crops cultivated in the northern or middle part of the United States, *the crop*, par excellence, is unquestionably wheat. Its intrinsic value as an article of food, its importance as an item of export, its influence on trade, and its vast sway in regulating the exchanges and commerce of the world, render it every where a crop of the greatest consequence, and particularly so in this country. To raise good wheat many things must be kept in view; the nature and texture of the soil —its quality, so far as richness or poverty is concerned—the kind of wheat most suitable for cultivation under the circumstances of the case—the cleanness and preparation of the seed—the time and method of sowing—and in short all the things that go to ameliorate the soil and secure a crop, must be attended to, rendering the growing of wheat one of the most arduous as well as profitable occupations of the farmer.

A good wheat soil always contains considerable clay, but it is so balanced and corrected by other ingredients as never to be cold and sour; if such is the character of any soil, good wheat need not be expected. Freedom from superfluous moisture or stagnant water, is an indispensable condition of a good wheat soil; and when such exemption does not naturally exist, it must be produced by draining. A moist cool climate is found not to be unfavorable to wheat, if the roots are preserved from stagnant water, and are allowed to range in a pervious soil; but in any climate wheat will fail where the soil is saturated with water that does not circulate. To give the requisite dryness and depth where they do not exist, draining and deep ploughing may be relied upon, and where these go together, with proper manuring a soil can scarcely fail to improve, or to be productive.

Deep ploughing, on most lands as they naturally are, and on all lands as they should be made, is essential to good wheat crops. The roots of this plant penetrate in a permeable soil to a great depth and spread to a considerable distance. The single fact of its being provided with two sets of roots, one of which spreads near the surface, and the other strikes deeply, is a sufficient proof of the necessity which exists for deep ploughing in its culture. In a few instances subsoils may be found which will not admit of deep ploughing, being composed of materials injurious to the wheat crop; but great crops of wheat are not to be expected on such soils.

The application of manures is a very essential point in growing the wheat crop. Land can be too rich, as well as too poor for wheat, or rather the manure in the soil may be in that condition which renders it unsuitable for wheat. There are some crops on which fresh or unfermented manure exercises a good effect, and to which it can scarcely be applied in too large quantities, corn for instance; while on others they produce results of the most unfavorable kind. Nearly all the cerealia are injured by fresh manures, the stalk growing too vigorous, while the berry is usually imperfect. Compost manures, or such as are made by layers of turf, stable manure, vegetable mould, lime, &c., in which the decomposition is already effected, can scarcely be applied too abundantly to land otherwise well constituted. The great crops obtained around old barns, or other decayed or removed buildings, is a proof that large quantities of decomposed manure may safely be used, while a much less quantity of fresh or undecomposed would be fatal. One of the greatest evils of direct manuring for the wheat crop arises from the liability of the grain so manured to lodge. The rapid growth of the stem renders it unable to support its own weight, it is soft and flexible, contains much less silex than those grown in a poorer soil; the wheat does not usually perfect its berry, and at all times, from the thinness and weakness of its skin or cuticle is more liable to mildew or rust. These things render it certainly unadvisable, unless the land is very poor and reduced, to apply unfermented manure to wheat.

The rotation of crops, has furnished the means of applying fresh manure advantageously to crops, and at the same time retaining its principal value for wheat. The cultivation of corn or roots in alternation with grain crops, clover, &c., gives the farmer the means of greatly increasing his crops, and at the same time constantly improving his soil. It may be considered as a settled maxim in agriculture, that land improves little or none while nothing is growing upon it. It is the general acknowledgment of this truth, that has substituted hoed or green crops for naked fallows, in the preparation of lands for wheat. Peas and clover are among the best green crops to precede wheat, and the latter may be considered inseparable from the successful culture of this grain. Corn would be one of the very best crops to precede wheat, could it in all cases be removed from the land in season to get in the wheat properly. The thorough manuring and tilling required for corn, puts the ground in good condition for wheat; and should experience prove that *very late* sown wheat is more safe from danger in winter, and more productive than that sown a little earlier, a result said to be established in some of the best wheat countries of Europe, the crop of corn would cease to be objectionable, and might be considered as nearly a clear gain.

There is a practice which has prevailed to a considerable extent in our wheat producing districts, of growing wheat after wheat several times in succession. Such a system of farming deserves the severest reprehension, and will never be adopted, except by those who are in a haste to be rich, no matter at what price, and in defiance of acknowledged consequences. Farmers may have succeeded in raising good crops in this way, where the soil was of the fine quality and excellent adaptation to wheat of much of our western land, but

nothing short of the most imperious necessity can justify this procedure, or tolerate such a departure from the correct principles of cropping. Land, which has once produced good crops of any kind of grain, may again be made to produce them; and under skilful treatment lands would never cease to yield good crops, where their first cultivation proved the adaptation of the soil to that particular one. The worn out and exhausted soils of New-England can be made to produce as good and as plentiful crops of wheat as they formerly did, but the labor and cost of restoring would be infinitely more than would have been required to have kept them continually fertile and productive. Crops have a specific food, which may be more or less plentiful in a soil, and without which they cannot be brought to perfection. Take for instance a worn-out eastern farm. A liberal supply of fresh manures will give all the growth necessary for a great crop of wheat; but will it fill the berry? will it make such flour as the wheat of western New York? We know it will not. The principal essential to the perfection of grain can only be restored by time and skilful cultivation to such soils; it would be wise then, where it exists, to prevent its decrease or its exhaustion.

It is unhappily too true, that on a large portion of our best cultivated wheat lands, the soil has become so infested with a variety of foul and noxious plants, that a course of naked summer fallow, thoroughly performed, has become necessary to counteract them, and prevent their increase and spread. On clean soils this would not be required, but some valuable crop might take its place, and thus add essentially to the profits, while it lessens the labor of the husbandman, so far as the operation of summer ploughing was concerned. The only alternative of such fallows is hoed crops, and these must of necessity for the reasons before given be too limited, to seriously affect the propriety of fallows on weedy land. Spring crops, such as barley, oats, spring wheat, or even peas, do not allow of sufficient cultivation to check the spread of weeds. The sowing of such crops on land where the Canada thistle for instance abounds, is precisely the treatment to make it spread and flourish. The thistle, stein krout, charlock, &c. will succumb only to ploughings and hoeings so often repeated that the mutilated plant has no time to recover from one blow before another is given.

The preparation of seed, and the quality of that sown, are objects of the greatest consequence. In the most favored sections of our country there are but few fields of wheat in which smut cannot be detected, and in a country so favorable to the perfection and purity of this grain, as the best wheat districts in the United States are, none at all should be suffered. In Europe, continual care is requisite to keep their wheat free, and in the best wheat countries the crop is almost wholly exempt from smut; here but a trifling attention is requisite and the consequence is, it is found almost every where, and in some places to the serious injury of the crop. Now it is well understood, that soaking or washing wheat in brine, and drying it with *caustic* slaked lime; will effectually prevent smut, as well as benefit the crop in other respects; to sow wheat therefore, without such preparation, is voluntarily to incur the risk of smutted wheat, and the inevitable consequent loss. There are some other substances that used as a wash for wheat appear to possess the power of destroying smut, such as copperas, vitriol, arsenic, &c., but as none are more certain in their operation, or can be used with less trouble or danger than lime, the application of that substance is undoubtedly to be preferred to any other.

The kind of seed used, and its quality, are things of too much consequence in the culture of wheat to be left to chance. There are many varieties of wheat cultivated, some very productive, and some very hardy; some ripening later and others earlier; and these kinds in sowing should be chosen with reference to the soil and location. Varieties which ripen at the same period, may sometimes be advantageously mixed, for sowing in the same field; but those that ripen unequally should be carefully kept separate. Some varieties of wheat may stand in the field longer than others before cutting, without danger of the seed shelling or wasting. Thus of the two kinds of flint wheat, the white and the Canadian, (the latter a comparatively new variety,) if the last should be allowed to stand after arriving at maturity as long as the first can be permitted with impunity to do, the loss by shelling would amount to no small portion of the crop. The first may stand almost to suit the convenience of the husbandman, while the last must be cut as soon as its maturity will admit, or certain loss will be incurred; and nearly the same remarks will apply to some other kinds. There are some farmers who seem to think that any thing that is in the shape of wheat, however imperfect or defective the berry, if it will only grow, may be used as seed. This is very mistaken policy. It is impossible that the young plant should be as vigorous and as perfect, when springing from defective and shrunken seed, as when growing from that in which the peculiar principles of the plant are fully developed, and the germination commences without check or hindrance. The seed that ripens first in the ear, and is separated with the greatest ease, is the most proper for seed, as these circumstances show it is the most mature. A farmer in one of the northern states, a few years since was in the habit of selling large quantities of seed wheat annually and at high prices, as his wheat was of a superior quality, very heavy, and productive, and supposed to be a new variety. It appeared, however, that he had brought his wheat to that degree of perfection, by selecting some of the finest ears from a field in the first place, and then instead of threshing the whole crop grown and using the seed promiscuously, he gently beat the sheaves over a barrel, by which only the best and most perfect grains were separated, and by repeated sowings had rendered the qualities so desirable permanent. The quantity of seed sown differs much in different parts of this country and in Europe. Perhaps the English use a greater amount of seed than any other people, and their crops are certainly not often excelled. From two and a half to four bushels per acre are there used; while here the quantity varies from one to two and a half bushels per acre. The general quantity is about a bushel and a half. Where wheat is sown late, more seed is required, as the wheat does not tiller or spread as much as when sown early; and when the berry is unusually plump and full, more is required than when the kernel is lighter. As on soils, too, that are not rich, a single plant will not throw out as many stalks as where

the land is very rich and fertile, it would seem that on such lands more seed would be necessary to seed it properly; as it is clear that where but one or two stalks shoot from a root, these must be more numerous than when a root produces half a dozen.

Opinions among farmers have been somewhat variant on the subject of changing seed; but we think unless more pains is taken to originate and preserve good seed on a farm, than now usually is, there is essential benefit derived from such changes. Wheat is certain to succeed better on lands not naturally adapted to its production, when the seed is brought from a good wheat soil or district. For many years the farmers of large sections of the western district of New-York, where the wheat crop at that time was apt to fail or smut, found a profit in sending some twenty or forty miles to procure seed from the best grain districts, and the crop from such wheat rarely failed in producing grain of good quality. There is also a decided advantage secured in bringing seed from lower land and a milder climate, to elevated lands, or a cold moist climate. Such a change of seed renders the mountain crop earlier and better than it would be if seed from the same neighborhood was used. Professor Brown has on this subject the following remarks, which are undoubtedly correct, as they are founded on the experience of husbandmen in the high and low lands of Scotland:

"We are convinced that the cultivator of a mountainous district, if he always used seed from his own crops, would reap later and later harvests, so that at last they would with difficulty be brought to maturity; a circumstance easily explained by the comparative shortness of summers in mountain districts. If, on the other hand, the cultivator of a flat country, the climate of which is mild, and the soil dry and light, continually made use of his own seed, it would head every year sooner, the stalks would become shorter, and the heads and grain smaller and smaller, and in time there would result but a poor produce. In this last case, the cultivator brings his seed with advantage from a country or district more cold, the soil of which is good and substantial."

The instances in which benefit has been derived, on what are called beech and maple lands, by using seed from oak lands, are so numerous that almost every one must be familiar with them. The advantages in this case, however we may choose to explain them, cannot with propriety be disputed.

As to the time of sowing wheat, it may be remarked, that very early sown wheat gets more firmly rooted, than later sown, and in consequence is less liable to injury from freezing out. Wheat may be sown so late, as not to germinate until the severity of the winter is past, or the greatest danger from frost is gone by; but such late sown wheat is far more liable to the attacks of blight or rust than that which ripens early, or which is so far advanced before the close, hot, showery weather, that marks the advent of blight, commences, as to be safe from injury. On the other hand, late sown wheat is very certain to escape the Hessian fly, which in some parts of the country is the greatest enemy wheat has to encounter. It would seem, then, that where wheat is liable to winter-kill or blight, early sowing is to be preferred; and that where the fly is prevalent, sowing should be delayed as long as possible. It may be added, that some experiments would seem to prove, that in districts where the wheat-worm has been so fatal to spring wheat, very late sowing, by delaying the earing of the wheat until the period of the worm-fly was passed, would preserve the crop.

There is more wheat lost to the husbandman from the single cause of winter-killing, or freezing out of the ground in winter or spring, than there is in this country from all other causes put together. The worst period is in the months of February or March, when the ground is bare of snow, and thawing mild days are succeeded by sharp freezing nights. This freezing expands the surface water, lifts the roots from their place a little at each time, and by successive freezing and thawing, leaves the plant without any hold upon the soil, and consequently to perish. Heavy soils are more apt to winter-kill grain, than gravelly, or light ones, as these can retain little water. It would seem to be a necessary inference, then, that thorough draining such soils as are apt to winter-kill wheat, would prove a remedy, and theory and fact in this case are found to agree. We have lately had the pleasure of seeing beautiful fields of grain growing on lands, from which a few years since the production of wheat would have been impossible. Thorough draining had removed the water that formerly saturated the soil, and by freezing the surface, prevented the lifting out process that always accompanies the freezing of wet grounds. It is usually the case that such wet grounds contain a large supply of vegetable matter, and draining renders them so productive, that the profit of a single crop not unfrequently repays all the expense incurred in the improvement, leaving the land, which in its former state was nearly worthless, a clear gain to the husbandman. If on common farms the means of trench or thorough draining are not at hand, surface drains made in such a manner as to carry off the water that falls on the land, should be constructed immediately after the sowing is completed. By preventing such water remaining in, and consolidating the land, grain is less liable to be thrown out; and though far less beneficial, or permanent in its effects, than thorough draining, surface drains should not be omitted where there is the least danger from excess of water.

POTATOES FROM THE SEED.

From the Cultivator.

Messrs. Gaylord and Tucker—One of your subscribers has made inquiry, as to the mode of raising potatoes from seed, for the purpose of procuring varieties: will you accept the following as a reply?

The saving of seed requires in the first place some little attention: being contained in a capsule of pulpy matter, it is necessary that it should be separated therefrom, by washing and drying, in the same way with cucumbers, melons, and some few other seeds, similarly produced; and then to be kept free from moisture till the following spring, or until when wanted, as thus saved it will keep good many years.

In order to its cultivation, in the month of April prepare a bed, in a portion of the garden that has

been manured the previous year, in the usual course of cropping, and the soil being well pulverized, open drills, about a foot apart, into which drop the seed thinly; cover with the rake, and beat down gently with the back of the spade, so as to close the particles of earth, and afford little access to the small black skipping bug, so injurious to the seed leaves of turnips and cabbage, which are equally pernicious to this crop, and require to be restrained from their depredations, by the best means in the grower's knowledge. When the plants have attained about half a dozen leaves, hoe, weed and thin them out, to three or four inches distance: the supernumeraries, taken up with a ball of earth to their roots, may be transplanted safely into a separate bed, and give the cultivator a fairer chance of the improved variety, and do away with the idea that may otherwise intrude on the imagination, that the better kind may have been lost in thinning.

Following the nature of the potato, the vine will now grow rapidly, and in a fortnight will require a second weeding, to be followed with what in farmer's language is called, earthing up; and it then remains only to watch the period of decay or ripening of each plant, as some will reach their maturity early, and others will continue growing till the arrival of the autumnal frosts. It may be satisfactory and useful to notice these periods, and contrast them with their times of ripening the successive year, and thus identify them, as an early or late sort. They will now have to be carefully harvested, each root having its produce kept separate, and placed out of the reach of the winter's frost, for the next year's culture; for this purpose, it will be advisable to employ a flour barrel of dry chaff, into which the potatoes are to be packed, each sort previously wrapped in paper and thus secured from mixture with another. In the ensuing spring they must be again submitted to the earth. The growth of this year involves no little care and trouble. Separate the early from the late, and dwarfs from those of more luxurious growth, and prepare the ground as before. If you plant in hills, those with the longest haum will require a distance of three feet; if on the contrary you drop them in furrows, the same distance will be needed from furrow to furrow, lessening the space as the plants decrease in the length of the vine to two feet. It may be as well also before planting, to take off a small piece of the peel to ascertain the color, the prejudice being in favor of the white potato over a yellow, and a yellow over a black, for there are all manner of varieties of hues, both externally and internally, and it would be useless to grow those which are quite black. Four or five tubers, where there are as many, will be sufficient for this year's cultivation, and as years are consumed in this undertaking, it will be necessary to commence an early system of experiment: for this purpose, of each sort plant a tuber whole, next a half, then two eyes, and lastly one eye, (Rohan fashion,) the distance between the planting when in drills from 6 to 8 inches, and if means are within reach, it would be proper to try as far as may be the effects of different soils on each potato, as the light, the heavy and the medium. No further directions are necessary for this year's culture; they are treated as potatoes, and will at harvest have attained their full growth and may be introduced into the kitchen: for although popular opinion gives three years for a potato to acquire its proper qualities, the foundation of which is perhaps more in the mystery of numbers than in real truth, yet as it will have reached its natural size, I can see no reason why it should require another year to develope its other properties. Should the experimenter resolve to put faith in popular sayings, it will be necessary, in harvesting, once more to separate the sorts and repeat the experiments he has just gone through, and any others that may occur to him.

The chief points of goodness or value in a potato, are a white color, a good size, smooth skin, with eyes or shoots gently depressed; there is a preference also for a kidney shape; the tubers should grow close to the stem, be numerous and keep well, and the haum or vine be short; and finally, above all, the potato must cook mealy: a combination of these points, would be the perfection of the root. To attain such a consummation, has been the continuous effort of the last nine years of the writer's life; that he has not accomplished his object, has been the result of a concurrence of unfavorable circumstances, an over fastidiousness to attain the most of the favorable points, and a soil unfavorable to the culture of the potato, stiff, cold, and clayey. Roots, that have promised well in the light soil of garden culture, have failed, when cultivated in the field; hundreds of sorts have been rejected on the score of color, the white only having been selected; length of stalk has condemned many, and perverseness, or incongruity of shape, with rude shoulders, &c., many more; and I confess that the celebrated Rohan would have incontinently been condemned to the hog-pen, had it been first raised by the humble individual who now addresses you. I have not recommended manure for the seed beds, as I have found an over rich soil raise anticipations, which were not realized in culture on a large scale. Much care is requisite to the safe keeping of the roots through the winter: the only sort I continue to grow, I had nearly lost some years back, by an early frost in November, which continued with so much unexpected severity, that I lost fifteen bushels, as I thought my whole stock; but fortunately one potato remained in the ground, and was preserved by the accidental dropping of a portion of salt hay on the spot where it lay. I was obliged to commence operations afresh, after having just raised sufficient seed to warrant the expectation of a full crop the succeeding year, for the market. I mention this to impress on the grower, a due care. It remains to be observed, that the experiment is quite a lottery. Five and twenty years since, I was fortunate the first trial; the last nine years I have industriously persevered, and from a thousand plants, have only saved one as deserving of culture, and that far from my ideas of a perfect plant. The fault lies in my seeking for too much, and looking for too many good qualities in the object of my experiment; many valuable potatoes I have thrown away in search of that which perhaps is not to be found. With more moderate expectations, I might have been more successful, and perhaps on a lighter soil, might have obtained my object; my want of success must not deter your inquirer from making the attempt. I still continue on a small scale. I have been led to prosecute a variety of experiments,

which, if they have not afforded profit, have supplied me with a fund of amusement, and probably some little increase of knowledge.

THE SCHOOLMASTER ABROAD.

DRY MEASURES OF CAPACITY.

To the Editor of the Farmers' Register.

Very few things are more useful in house-keeping than such articles. Yet, I believe, it may truly be said, that very few if any families are provided with more than one or two of them: say, a half-bushel, which rarely agrees with the standard, and something called a quart-can, together, perhaps, with one which is supposed to contain a pint. These last, however, are always of the wine measure size. Consequently, every one who receives any dry article measured by them—meal or flour, for instance—loses very nearly ten cubic inches in every quart which he purchases, there being that difference between the wet and the dry measure quart. But this is not the worst of it; for I believe that almost all, probably all the measures we make for ourselves, (if indeed we make any,) of a smaller size than the half-bushel, such as the peck and half-peck measures used in our mills, are graduated by the tin quart-cans which we purchase from the tin-shops, and never think of examining so as to ascertain what they contain. I know not what is the cause of this carelessness and neglect, unless it be, that most house-keepers are either too lazy, or too ignorant of common arithmetic to direct the making of their own measures, especially in a round form, and so leave themselves entirely without any. But be this as it may, I have thought that I might perhaps render an acceptable service to some of our agricultural brethren, as well as to others, by furnishing them with the dimensions of boxes nearly square, which would contain the following quantities: a bushel, half-bushel, peck, half-peck or gallon, half-gallon and quart—barrel (of 5 bushels) and half-barrel. All these can easily be made by any common carpenter, who can use the ordinary tools of his vocation, and can procure a small quantity of very well seasoned plank of some wood which is least liable to shrink and to swell.

You, my good sir, and many others know, that no measure of capacity can be made with absolute accuracy, for reasons with which it is needless here to trouble your readers in general, and I shall therefore omit them. But the fractions in the measures here given, are quite near enough for all common purposes, as all of them come within a very few parts of a cubic inch of containing the exact quantities which each is designed to contain. None are in use of greater accuracy.

Dimensions.

A box 16 in. by 16.8-tenths and 8 in. deep will contain a standard bushel or 2150 cub. in. 4-tenths.
A box 12 in. by 11.2-tenths and 8 in. deep will contain a half-bushel or 1075 cub. in. 2-tenths.
A box 8 in. by 8.4-tenths and 8 in. deep will contain one peck or 537 cub. in. 6-tenths.
A box 8 in. by 8 and 4.2-tenths deep will contain half a peck or 268 cub. in. 8-tenths.
A box 5 in. by 5.6-tenths and 4 in. deep will contain half a gallon or 134 cub. in. 4-tenths.
A box 4 in. by 4 and 4.2-tenths in. deep will contain one quart or 67 cub. in. 2-tenths.
A box 24 in. by 16 and 28 deep will contain a barrel or 10752 cub. in.
A box 24 in. by 16 and 14 deep will contain half a barrel or 5376 cub. in.

If those who may wish to use the foregoing measures, which are not to be found in any book that I have ever seen, will only copy them in their pocket-books, (should their memories be too short to retain them,) they may always be prepared with plain directions for making them, without the trouble of referring to your Register. I venture to give this admonition, because I know, by long experience, that many of us will rather go without any information we may want, than walk a few steps after a book in which we are certain it can be found. Such is the *vis inertiæ*—the highly culpable mental torpor of thousands among us, who will make no effort to correct this shameful fault, although daily sensible of its existence, and very frequently suffering, not only inconvenience, but considerable injury from its influence. But I must forbear to moralize farther on such a subject, lest some of your critical readers may accuse me of "travelling out of the record" farther than need be. I will therefore conclude with renewed assurances that I shall ever remain yours, very sincerely,

JAMES M. GARNETT.

From the Carolina Planter.

ON PREPARATION OF MANURE.

Fairfield, Sept. 1st, 1840.

To those planters who are desirous of pursuing the system of manuring systematically, perhaps a few hints thrown out at this time may prove eminently useful. The period at which I usually commence making manure for the ensuing year is immediately after the planting of my cotton. There generally occur some days of leisure, between the planting and the working of the crop, which I devote to the raking of leaves and hauling and depositing them in my stables and cow-lots. The leaves which are deposited in the spring will be thoroughly trodden and rotted by the summer, and as soon as the crop is laid by, my hands and wagons are again employed in making a second deposite of leaves in the lots. My stables at this time are cleaned out, and the dung spread over the lot which is around the stables. This second deposite becomes pretty well decomposed towards Christmas, when the planter is generally near or quite through with his cotton picking, my third and last deposite of leaves takes place at this time, and the stable dung again spread over the compost. Their different layers of leaves and dung are thoroughly intermixed by penning my cattle on them, and the whole mass becomes fit for use by the first of February; at which time, if the grounds are in order, I commence hauling out my manure. The first step in a system of manuring is to become sensible of its advantages by actual experiment, after which its preparation and application become as much a matter of course, as the planting of the crop. So palpably beneficial are its effects, that I have never yet had an overseer, who has not entered with spirit and alacrity into the

system. My practice is to plant my older and thinner lands in corn, and to manure them well, and with such aid, they will yield more than fresher lands without manure. Such a course leaves the better lands to be planted in cotton which is to be considered as the main crop of our southern states. In addition to the manure on my corn lands, I have usually been able to manure from 75 to 100 acres of cotton most convenient to the homestead. Even those of us, Mr. Editor, who have done most in this matter, must feel that we have made but a beginning, and that our resources are as boundless as the leaves of the forest. In the lower country, where the system of manuring has been longer in existence; it is much more extensively and successfully carried on than with us; and several planters of late have gone to the expense of spreading one hundred bushels or more of salt over their compost heaps, and as they believe with decided benefit to the crop. The practice there is to keep one or more boys and carts, according to the size of the plantation, hauling leaves into the lots and stables the greater part of the year, and no doubt where horse power is scarce, that this is the better plan. But with us, where it is so abundant, I think the periodical application of the force of hands and wagons the better plan. But of this, every planter will judge for himself. I would suggest to such of your lower country readers, who have been in the habit of applying salt to the compost heaps, whether it would not be better to feed it to their stock? Would not the urine of such stock be more highly charged with saline properties? Would not those properties be more equally diffused throughout the compost heap in this indirect, rather than in the direct application of the salt itself? And should not the known benefits of salt as food for stock incline them to this course. In my remarks I have confined myself altogether to the use and preparation of compost, and valuable as this manure may be in improving our lands, yet it is a very limited means of improvement, compared with a judicious rotation of crops, and the ploughing in of vegetable matter. This is the system upon which we must mainly rely for an amelioration of our lands, and sooner or later it must be adopted or we shall be driven to the necessity of emigration. As this article, Mr. Editor, is already long, I will make this latter subject the head of a separate article at some future period. PRACTICE.

BOILED FOOD FOR POULTRY.

From the Farmers' Cabinet.

It is customary for some poultry-men to cook the different grains which they use for fattening poultry, and this they do by boiling, continuing the process until the mass swells, and becomes so soft as to break the envelope, by which each grain is surrounded, conceiving that such food is better for the purpose, and the use of it far more economical, than the dry grain. Now, whether this idea is or is not correct, still it is of importance to know the difference of expense between the two, and interesting to ascertain whether more or less of it is eaten than of that which has not been submitted to the culinary process. To discover this, I find that Mons. Reaumur caused four pints of each of the six grains following to be boiled until they were well bursted, and he found that the increase of bulk of each sort was as follows:

4 pints of oats after boiling filled				7	pints.
4	do.	barley	do.	do. 10	do.
4	do.	buckwheat	do.	do. 14	do.
4	do.	Indian corn	do.	do. 15	do.
4	do.	wheat	do.	do. 10	do.
4	do.	rye	do.	do. 15	do.

Rice was not tested, but swells much more than any of the above: it is seldom, however, used for the above purpose.

On experiment it was found that poultry were not uniformly partial to boiled grain, although occasionally a preference was shown for it; nor did it appear that they entertain a decided partiality for one species over that of every other; wheat, however, being sometimes preferred and rye disapproved of; it therefore follows, that we might make choice of that grain which happens to be most plentiful or cheapest, always excepting rye, which must not be used unless other sorts cannot be had.

Other experiments were make to ascertain whether there be any economy in feeding with boiled grain, and this was done by knowing, first, how much dry grain sufficed for one or more fowls and then boiling the same quantity, and trying how much in that state would suffice for a meal; the result was as follows. Rye, although so very considerably increased by boiling, instead of being more satisfying, becomes less so, more of it being consumed when boiled than when dry. Oats, although increased by boiling nearly one-half, are not, on this account, more satisfying for poultry, which, if in two days they will consume four pints of dry oats, will, in the same period, eat seven pints when boiled; so there is no economy in the additional trouble. Mowbray is of the opinion that oats scour, although they are supposed to promote laying, and are in many places used for fattening. Buckwheat swells still more than oats by boiling, but poultry will consume fourteen pints boiled, in the same space of time that four would be sufficient, and it is thought to be an unsubstantial food. But Indian-corn is more profitable when boiled than raw, the saving being one-third, or near it; while the fowls which ate two pints of barley in its dry state, consumed but three pints of the boiled grain; therefore, as ten pints of boiled barley are produced from four pints of dry grain, the experience in dry barley is to that of boiled, as ten-fifths to six-fifths, or as ten to six, or five to three; amounting to a saving of two-fifths by giving boiled instead of dry barley: thus it is far more profitable and effective when boiled than raw, and, if fed to the poultry while warm, it will hasten materially the period of laying, promoting in a high degree the health and thrift of all kinds of poultry. Wheat, as shown in the above table, increases in bulk on boiling, nearly the same as barley; and these experiments go to show that the use of boiled wheat, barley and Indian-corn is a matter of economy, while on the contrary, in the boiling of oats, rye, and buckwheat, you have the loss of fuel, time, and trouble, out of pocket.

These things are worth remembering, especially at the present time, when the fattening of poultry is carried to so great a length, our steam-boats and rail-ways requiring such quantities to feed their passengers, poultry being, in so many ways, the

standing dish of their public tables. For the *keeping* of poultry before fattening, no food is at all to be compared to boiled potatoes, mixed with a small portion of *boiled* barley, the process of which is very much expedited, if the grain is broken in the mill before cooking; but in that state it will require stirring while boiling, to prevent it from burning.

It is found, by actual experience, that there is no saving in the substitution of bran for grain; some persons take the trouble to boil this, but it does not even increase its bulk, and not at all its quality. Two measures of dry bran, after boiling, will not go so far as one measure of *boiled barley*, thus showing a striking difference in favor of barley, even in point of economy. S.

THREE LETTERS FROM GEN. WASHINGTON TO COL. EDWARD CARRINGTON.

[The following letters are part of a larger number from Gen. Washington, and all in his own hand writing, to Col. Carrington, for the perusal and use of which we are indebted to the kindness of the present proprietor, Henry Carrington, esq. of Charlotte. The few which will be published below, and now for the first time, are selected not as the most interesting, (for, indeed, they are the least so,) but merely because they relate to subjects proper to be embraced in this journal. But though containing nothing of agricultural instruction, for the present time, they possess a different kind of interest, in exhibiting something of old agricultural opinions and practices; and still more as coming from one whose every act and opinion will grow in interest to his countrymen with the passage of time, and the increased remoteness (in respects far more important than merely in time,) from the acts of him "whose like we ne'er shall look upon again."—Ed. Far. Reg.]

Mount Vernon, 26th June, 1797.

Dear Sir—General Marshall, who did me the favour to spend an evening at this place on his way to Philadelphia, confirms the report I had before received of the utility of Mr. Booker's improved threshing machine; and added, that a letter for that gentleman directed to your care, would certainly reach him.

As I am extremely desirous, (and that with as little delay as possible,) to get one or two erected, and had got the scantling for them on the plan of the Scotch machine, used by Mr. Jefferson, Genl. Lee and others, I have taken the liberty of requesting the favour of your care of the enclosed letter—to which I am induced from the consideration of not having possessed myself of Mr. Booker's christened name, or place of abode. I am always and sincerely your affectionate humble servant Go: Washington.

Colo. Carrington.

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Mount Vernon, 7th July, 1797.

Dear Sir—I feel myself very much obliged by your kind and prompt despatch of my letter to Mr. Booker, who, offering to be here between the 20th and 27th of the present month, (if that would suit me,) the enclosed is to inform him that it will, and that I shall accordingly depend upon it; and you would add to the favour already conferred on me in this business by letting it receive a safe, and as expeditious a conveyance as may offer, as he awaits my answer to decide on his measures, and, because I am very desirous of having the machine erected in time.

With very great esteem and regard, I am, dear sir, your most obedient, obliged and affectionate servant, Go: Washington.

Colo. Carrington.

—

Mount Vernon, 2d Dec'r., 1799.

Dear Sir—Since you mentioned the plaster of Paris which was for sale in Richmond, (but after you left this,) it occurred to me, that as it was not a saleable article with you, it might be my cheapest mode to purchase *there* to supply my want of this article next year on my farms around me.

Permit me, for this reason, to ask the favour of you to learn from the gentleman who has it for sale,—what quantity he has?—the lowest price he would take for it by the ton (the whole being purchased)?—there?—and what, delivered at my landing?—As a merchant, acquainted with navigation, he will be at no loss to know at what freight it could be delivered here.

A gentleman now in Alexandria is endeavouring to obtain subscribers for a vessel load from Nova Scotia;—the terms I have not learned;—but if that in Richmond be *good*, and [can be] had as low, I should prefer it because it is already in the country, and the risques of the sea avoided.

All, however, depends upon its being of the *true sort*—for without this, it wou'd be as useless for the purpose intended, as pebble stones.—There are two colors of it—one has a greyish—the other a bluish cast;—the latter I think is preferred; but both are good when perfectly free from grit, or sand;—having any of the latter is a proof of its baseness.—The best criterion for ascertaining its property, is, by putting the fine powder of the plaster into a skillet or pot without moisture,—the good will swell, or rise up; the bad will remain dead, and motionless.

I would thank you for sending me (if to be had) two glazed leather hats such as your postilions wore, and of that size.—Accompany them with the cost, and the money shall be remitted in a bank note.—I am in no immediate want of them;—an occasional, or water transportation (directed to the care of Colo. Gilpin in Alex'a.) will do.

I hope you got down safe.—Our comp'ts to Mrs. Carrington.—I am always, dear sir, your affectionate and obedient Go: Washington.

Colo. Carrington.

STUCCO WASH.

Six quarts of clean lime, slaked in boiling water, 2 quarts of salt, 5 gallons of water—boil and skim, then add one pound of copperas, and ¾ lb. pot or pearl ash, gradually, and four quarts sifted wood-ashes—color to taste or fancy: applied while hot.

2d. Clean, fresh-burnt lime, same as above, ¼ lb. burnt alum, powdered, 1 lb. sugar, 3 pints rice flour, made into a jelly, 1 lb. clean glue, first dissolved—5 gallons water: will retain its brilliancy for a century.—*Farmers' Cabinet.*

SECOND MEETING OF THE ENGLISH ROYAL AGRICULTURAL SOCIETY.

From the Yankee Farmer.

The English agricultural papers give a detailed account of the second meeting of the Royal Agricultural Society, which was holden at Cambridge on the 14th and 15th of July. This was doubtless one of the greatest collections and greatest displays of the kind that has ever taken place at any time in any country.

So great was the influx of visiters that at midnight preceding the 14th, the town wore all the active appearance and bustle of the day. The opetions of the society commenced by a grand ploughing match in a field of upwards of 40 acres. The competition was to commence at 10 o'clock, but before that hour the road was crowded with equestrians, pedestrians and persons of every description and vehicle. There was no dissipation, no disorder, all mingled together engaged in friendly converse from peasant to peer, and although there were upwards of 20 thousand there was not a single robbery nor an attempt made. The prospect from the field was most exciting. It is seated at the base of one of the most commanding range of hills in Cambridgshire, and presented a wide and vast amphitheatre.

Fifty seven ploughs were entered in competition, each of which had to plough a compartment of 200 yards in length and 60 in breadth. Every man was at his post and the signal for starting was given by the sound of a horn. The match was well maintained, and as it regarded the quality of the work and the time, gave much satisfaction. The judges were mounted on gray houses.

The work having been completed, the ploughmen assembled at the judges' marquee to receive the awards, which were given by the Duke of Richmond, the president of the day. His grace ascended a wagon opposite the council tent, the ploughmen and ploughboys were marshalled in an extensive area, and outside of the ring a great auditory.

In addressing himself to the competitors, the duke expressed his pleasure in having been honored by the gentlemen and farmers in being appointed to present them with the reward of their skill and industry. "It was a gratifying circumstance that their honest merit would receive its due reward. The good conduct and exertions of the ploughmen and ploughboys would now receive the reward, which he was in hopes would influence their future condition. So long as such feelings as were displayed on this occasion existed, England would be happy, flourishing, and free, as she deserves to be.—(Cheers.) It was still a greater satisfaction that not only men, but boys, had competed and obtained a fair share in the prizes. There were amongst the latter two brothers, who had been very successful, and it showed that they had been brought up well. It showed the force of that example which they wished to inculcate in all classes of the agricultural community; it showed that they had observed the great laws of their country; and, what was still higher, the greater laws of their Creator.—(Loud cheers.) The noble president said that he would not detain the meeting longer, but would proceed to deliver the awards which had been granted by the judges.

The prizes in money were next delivered to the successful candidates, from five pounds each to a sovereign. The Duke of Richmond addressed each in proper remarks, endeavoring to convince them of the necessity of adhering to those principles by which they had been now successful, and holding out an example to their neighbors. His grace also stated that as the committee wished to give encouragement to every exhibitor, who he hoped would be successful on future occasions, they had awarded to each competitor half-a-crown. The President's speech was very effective, and listened to with great attention.

While the ploughing match was going on, there was in an adjoining field an exhibition of agricultural implements. Among the most prominent were four sub-soil ploughs, which have within five years come into general practice. There were in operation thrashing machines, chaff-cutting machines, scarifiers, hand-thrashing machines, drop drills, turnip drills, dibbling machines, crushers, harrows, &c.

There were exhibited 86 different ploughs. Among the best were a variety of mouldboards, and frames and bearings of the ploughs, and the couplings that fasten the mouldboards so constructed as to admit of several shapes being applied, from the most wedge like to those of the most convex or concave surfaces.

Case hardened metal for ploughs seems to have been rather a new thing in England and has made almost a new era in the use of cast iron for that purpose. Till this mode of hardening was discovered, cast iron ploughs were but little used, as they were condemned from their soon wearing thick and forming a bevel.

A portable thrashing machine, manufactured by J. R. & A. Ransom, worked by four horses, thrashed upwards of 60 bushels in one hour. A hand thrashing machine, for the power of four or six men, knocked out five bushels in fifteen minutes in nice order.

Ransom's chaff-cutting machine cuts any length from 1-16 of an inch to 2 inches, if so ordered. It is well calculated for cutting gorse, (furz, a thorny plant of the genus *ulex*,) and it is well adapted to cutting cane tops.

Biddell's scarifier. This a very powerful implement for the purpose of cultivating land under a variety of circumstances, and bringing it into a proper state of tilth, much more effectually and at less expense than can be done by means generally employed for that purpose.

Portable sheep fold. In the construction of the hurdles, which form this fold, strength and lightness have been studied. There was only one pair of wheels to each hurdle, and the whole may be moved with great facility, by either a man or a lad. They may be instantly connected with each other, and when together form a strong fold. As a temporary division on gentlemen's grounds, these hurdles would not be unsightly. By the use of hurdles on wheels the exceedingly injurious effect of setting common hurdles with stakes over land-drains is avoided.

Grass mowing machine. This is for cutting grass on lawns, pleasure grounds, and bowling greens, and is so easy to manage, that persons unpractised in the art of mowing, may in a short time use it with ease.

Hay bay beater. This machine is for the purpose of taking the dust out of mouldy hay, previous to use or being cut into chaff.

Messrs Bond, Turner & Hamblin exhibited a very superior and powerful thrashing machine of four horse power—the manner it performed its work was particularly admired, and which thrashed in a superior manner twenty-four bushels of wheat in twenty minutes, being more by one fifth than any other machine realized in the same period of time.

"The portable hand-power thrashing machine, shown by Mr. B. Urry, of Newport, Isle of Wight, was decidedly one of the most excellent machines of that description we ever had the pleasure to witness. The apparent ease with which it was worked, and the large quantity of wheat thrashed out in a limited period, were the theme of universal approbation."

CREAM-POT CATTLE, AND TEN HILLS FARM.

From the Cultivator.

One of the most attractive places to the agriculturist, in the vicinity of Boston, is the Ten Hills farm, occupied and managed by Col. S. Jacques, and owned by an association principally composed of rich merchants in Boston. The object of the association was to form a stock farm, and a company was formed of one hundred shares of three hundred dollars each, the property held in trust for the owners of the shares. On this money the proprietors receive from Col. Jacques five per cent. annually, or fifteen hundred dollars in the whole. It is a noble instance of private liberality, for the advancement of agriculture. How easily might such a pattern farm be established in any of our rich agricultural counties, if the same spirit of improvement was as operative in them as in Boston. On this farm, Col. Jacques bred the celebrated Merino ram which yielded 42 lbs. of wool at three shearings, an amount probably not equalled by that of any sheep in this country, Merino or otherwise.

But the most interesting object on the Ten Hills farm is the breed of cattle, called by Col. Jacques, the cream-pot breed, and which for richness of milk are unrivalled. The origin of this stock, according to Mr. Colman, was a fine native cow raised in Groton, Massachusetts, but of her origin farther, nothing is known. She was sold to a gentleman near Boston, a dealer in milk, and so rich was her milk, that the movement necessary in carrying it, frequently converted it into butter. Mr. Jacques procured this cow, and by crossing with the short-horn bull Cœlebs, afterwards owned by Mr. Jacques, originated the breed which has since become so famous. Mr. Jacques a short time since informed Gov. Hill, that "this celebrated bull, while in his possession, went to four hundred cows at ten dollars each; and on his head he received in cash thirty-eight hundred dollars." Col. Jacques' improvements have received the test of three generations, and he has now about forty cows and heifers, and ten or a dozen bulls and bull-calves. The color of this stock is a rich deep red, one of the most beautiful and favorite colors, and of good form and proportions; and in the language of Mr. Colman, "if they continue to display the extraordinary properties by which they are now distinguished, they promise to prove themselves for dairy purposes the most valuable race of animals ever known among us;" and in that of Gov. Hill, "such an animal as the five months' calf, at the price of one hundred dollars, for a breeder, would be capital well invested, if kept only for the use of a farm of a dozen cows."

Col. Jacques' own account of the manner and object in his course of breeding, is as follows: "It has been my object to effect such an improvement in milch cows, as should produce the greatest quantity of rich milk, affording the largest quantity of butter. There is a greater difference in a pecuniary point of view, between a good and a poor cow, than among any other domestic animals. In some yards may be found those that will not produce more than three pounds per week, and others that will make nine, and all on the same keep. As we sometimes hear of cows, which have produced seventeen pounds of butter per week, and even more, it occurred to me to inquire why a breed or race could not be formed with the same valuable properties. This I have attempted; and have carried it to the third generation, and I am confident of success. I have a cow whose milk has produced nine pounds of the best butter in three days; and this on grass feed only. This I call my *cream-pot breed.*"

It is evident to us that Col. Jacques has adopted the true course in producing a valuable stock. He selected animals combining the qualities he desired to perpetuate in the greatest degree; and in continuing his operations, a selection of only such for breeding as evince the same properties, have been chosen by him. With this precaution, he cannot fail of success. The qualities that in the first instance may have been partially accidental, become constitutional and permanent, and we can see no good reason why the cream-pot stock of Mr. Jacques should not become as celebrated as the short-horns of Messrs. Collings or Berry, to which, indeed, they are so nearly allied.

LIGHTNING RODS FOR BARNS.

From the Cultivator.

No sooner is the harvest gathered, and the farmers' barns well stored with hay and grain, than the newspapers are constantly bringing us accounts of their destruction by lightning. Every year the loss sustained by the burning of barns by lightning, is far greater than that of dwelling houses, and more lives, we believe, are annually lost in them; yet, while houses are protected by conductors, or insured against fire, barns are left to take care of themselves. In a single storm that passed over the Delaware river near Trenton, a few weeks since, three barns were struck and destroyed; 14 cows were lost in one, and the whole loss was several thousand dollars. None were protected, and on one only was there a trifling insurance. The reason why barns at such a season of the

year are so frequently struck, is owing to the column of heated vapor that rises from the partially fermenting mass within, which vapor is one of the best conductors for the electric matter of the cloud. After this vapor ceases to rise, barns are in no more danger than other buildings of equal elevation; and the necessity of protection, or insurance, arises from the fact that the greatest danger is at the precise time when the greatest value is accumulated in them. Common prudence demands that protection by rods should be given, or insurance against such casualties effected.

PASTURE.

From the American Farmer.

An English writer recommends to mix a few sheep and one or two colts in each pasture for horned cattle. Another says, "the following economical experiment is well known to the Dutch, that when eight cows have been in a pasture, and can no longer obtain nourishment, two horses will do very well for some days, and when nothing is left for the horses, four sheep will live upon it; this not only proceeds from their differing in their choice of plants, but from the formation of their mouths, which are not equally adapted to lay hold of the grass.—New grass, stocked very hard with sheep will unite and mat at the bottom, and form a tender and inviting herbage. In North Wiltshire, (famous for cheese) some dairymen mix sheep with cows, to prevent the pasture from becoming too luxuriant, in the proportion of about one sheep to a cow."

WHEAT-SOWING.

From the Farmers' Cabinet.

Sir,—As the time of wheat-sowing is advancing, and while the growers of that crop are suffering under the injuries inflicted during the present season, by blight in all its different varieties, I would desire to address a few words to those of our friends who would be willing to hear and to reflect upon the subject, in the hope that some means might be devised by which to escape such ravages for the future, or at least, to guard as much as possible against *effects* which, however variously the *cause* has been accounted for, have never been miscalculated or misunderstood.

That there has been a woful falling away of hopes in regard to the wheat and rye-crops of the present year, is admitted, especially on warm and light soils, where the prospect, even until after the opening of the spring, betokened better things; nay, at that season, "the crops never looked better," as was the constantly expressed opinion of travellers and the papers of the day; and the first intimation of the lurking evil was a sort of patchy appearance of the wheat, occasioned by innumerable little tufts standing up in all directions, somewhat like what are often observed on the springing of the seed after sowing, the field-mice carrying off the grain and depositing it for their winter store: and this appearance was observed in March, just after the time that all vegetation had suffered by ten days of exceedingly cold winds, after as many days of unseasonably warm weather, which had produced a premature growth of vegetation, that had set all the old men and women throughout the country *conceiting* that we should suffer for this *by-and-by*, and which we have done, as well in the winter grain, as in fruits of various descriptions; all which has been attributed, and perhaps justly, to a prematurity of growth; for it has been observed that the county of Lancaster did not suffer in the same degree; their crops were less forward, owing to the land being heavier and colder and more exposed, by an undulating surface.

It has been said, by a writer in the Cabinet, and I have strong reason to agree with him in the opinion, that our climate is too hot and dry for the cultivation of wheat, which yields better, and is less liable to be affected with blight in cooler climates and on stronger soils. Now if this be the fact, and I have no doubt it is, cannot we contrive to create, artificially, a state of things which would bring us nearer the end desired; retard the progress of the plant in the early stages of its growth, and thus increase its strength, and render it less obnoxious to the sudden and extreme changes of the atmosphere, to which I believe, almost all the evils of the present remarkably changeable season are to be attributed? I think we can; and perhaps it would be the *shortest* way, first to consider how we would act if our object were to force onward a *premature growth*, and obtain the largest and most vigorous crops before the commencement of winter. Now, to accomplish this, every one would say, pulverize as much as possible the seed-bed designed for wheat, by ploughing early an oat-earth or stubble, the crop of which had been raised after corn, which had been so often worked over as to be rendered as light as an ash-heap to appearance; and, when you have obtained a particularly fine light tilth, spread it with manure from the winter cattle-yard, and, if possible, add a good coat of lime: turn all in with the plough, and, upon this *hot bed*, immediately sow your wheat early in the autumn, so as to secure, if possible, a growth of a dozen inches in height before the setting in of winter.

Now this, I believe, is the *usual* course which is pursued, with the hope of obtaining a large crop of wheat at harvest, unaffected by blight, smut, &c., and, in very favorable seasons, it is *possible* that this might be accomplished; but in nineteen cases out of twenty, I should expect that just the reverse would be the result. Then, to *retard* the growth of the crop, and enable it to become strong before winter, it is only as much as possible to reverse the course, by sowing the crop on a clover-lay after one ploughing, deep and carefully performed, with very small furrows, laying the land whole and unbroken, and as flat as possible, allowing it so to lie unsown, until after rain has fallen, and the surface has again become dry enough to work well under the harrows, perhaps for twelve or fourteen days; then, to sow the seed, two bushels per acre, harrowing it in the way the land was ploughed, and await the result.

The manure, in this arrangement, should be spread on the young clover very early in the spring as a top-dressing; and, to fit it for this purpose, it ought to have undergone fementation; to induce this, the manure should be taken periodically from the cattle-yard during winter, and be deposited in the clover-field; the act of removing

and throwing into heap, would be the means of bringing forward such fermentation and fitting it for use. Two crops of clover-hay might be taken from the land during the summer, and in September the lay may be turned down with, in common seasons, *a certainty of escaping the blight*; the crop will not then be too big and leafy; the straw will be strong enough to support the ear, nor will it be in danger from the fly, smut, mildew, and about half-a-dozen other disorders, which, I am satisfied, all arise from the same source, namely, the *diseased state of the crop.*

In a work which I have now before me, I find the following judicious remarks on sowing wheat on lay-land; they are the experience of a very close reasoner, and an extensive cultivator of the soil, the value of which I have had frequent opportunities of testing, and can therefore recommend with the greatest confidence to the practice of all who are preparing to cultivate a wheat-crop the next year.

Bordley says, "The language of English farmers is, wheat on clover-lay should be sown on earth, that is, after one ploughing; and to conform to this doctrine I conducted this business on fifteen acres, in this manner—the clover having been cut once for hay and then pastured, but not close, the lay was turned in deep, and the furrows laid neat and close; the wheat was sown broadcast, and harrowed twice, in the same direction in which the land was ploughed; the wheat was then rolled. The crop stood well and yielded satisfactorily, but as it grew two miles from my other wheat crops, a just comparison between them was not made. The operations followed each other immediately, without any pause, but Mr. Macro's experience is against this *immediate* sowing upon ploughing in the clover-lay, and his experiments were repeated, while mine was a single instance, which, although it proved highly satisfactory in *general*, was without any pointed *particulars* relating to a much superior produce. Mr. Macro gives the following encouraging detail of his practice and success. 'From upwards of 20 years of experience, I am of opinion that the best way of sowing clover-lands with wheat, is to plough the land ten or twelve days before you sow it, that the land may have time to dry; and after rain has fallen, enough to make the land dress well, lay on the seed in September, two bushels an acre. The furrows in ploughing ought not to be more than *eight or nine* inches wide and less than that is better, if the plough will turn them well. I am at a loss to account for the wheat thriving better on lands that have been ploughed for some time before the seed is sown, than on *fresh ploughed lands*, which work better, and constitute a better bed for the reception of the grain; but I have often tried both ways on the same lands, and have *always* found the former answer the best.

"Now, I conjecture that the clover plants being buried, and the wheat sown at the same time, they both ferment and run into heat at the same moment; the germ then shoots; and the roots are extremely delicate and tender for some days, during which the buried herbage obtains its highest degree of heat, which, added to the internal heat of the germ, may, although *only slightly*, check, and a little injure the delicate shoot of the wheat; in sprouting barley for making malt, a little excess of heat in the bed checks, and a little more stops the sprouting or growth of the spears.*

"But both the above modes of sowing wheat on clover-lay *after one ploughing*, give crops *superior to those raised on fallows;* and farmers can easily try both, for determining which to prefer—that is, as well in the *immediate* sowing on ploughing in the clover, as in the method of sowing not until ten or fourteen days after; both modes are excellent. I should say, in letting the soil rest ten or fourteen days, an opening is given to heavy rains, consolidating and leaving it in an inferior state for receiving the seed; and if rain falls after burying the clover and before sowing the wheat, it may sometimes be necessary to wait for the ground to become *only moist*, rather than to sow when it is wet and heavy; but if the clover is ploughed when the land is dry, he may choose to wait for rain before he sows, although, for this reason alone, he need not wait. I have found it quite safe to sow during a drought, on clover once ploughed, and when the soil is very dry, but not when a light rain has fallen on very dry land; in the former case, the seed is safe until rain falls, which is usually in plenty after a drought, for then the seed grows quickly up—but in the other case, it is only slightly damped and swells, but the moisture is so soon evaporated as to leave the seed to dry-rot and perish; it is probable that Mr. Macro's was a light soil, and not liable to be hardened by ten or fourteen days' exposure before sowing, as, on a rain, strong wheat-land would: but

* This may be a very specious mode of arguing, but to my mind it is all wide of the mark. To me it is only necessary to suppose that the newly turned-up land, on subsiding—as it must do to a very considerable extent, when operated upon by the *pressure of the atmosphere*, and which would be increased by the internal heat mentioned above—acts very injuriously on these delicate shoots of the wheat, by compressing and dragging them down in its folds; and it might easily be supposed that its future growth would be very much injured thereby; "doubling them up" as an old friend describes it, "and crippling them in their youth;" and I have no doubt that many of them are broken and destroyed by these means.

There is a district in the Isle of Wight (that garden of England, as it is termed, where wheat is grown in one year, sufficient for the support of the inhabitants seven—so says the history) surrounding the village of Niton, where, if wheat is sown immediately after ploughing the land, the crop is sure to be destroyed by what is called the *root-rot*, occasioned by the subsidence of the soil, which falling away from the plants, leaves them exposed to the winter's frost, by which they are lifted out of the earth, and so they perish: the farmers, therefore, after ploughing their land, leave it unsown until, perhaps, it becomes covered with seed-weeds, upon which, however, they harrow in the seed, with the expectation of reaping a full crop. Some of your readers from that part of the world may have it in their power to endorse the truth of what is here stated; they will smile at the idea that "lands, if left unsown for ten or fourteen days after ploughing, will become too consolidated, and be in an inferior state for receiving the seed!" Wheat *requires* a consolidated seed-bed: and it is the custom on the hills of Wiltshire (England) to delay the time of wheat-sowing (which, however, always takes place *before harvest*) until a fall of rain, in the midst of which the seed is sown, and, instead of being harrowed in, it is trodden by flocks of sheep, and sometimes cattle also, until the land has the appearance of a *mortar heap!* they then expect a crop.

farmer Kliyogg, the Swiss, says, that *wheat* shoots strongest when there is an interval between the time of ploughing and sowing, but that *barley* is most vegetative when sown immediately after the plough.* One of my neighbors, intending to sow wheat on clover-lay, ploughed up the clover a week or two before seeding-time, and then gave it a second ploughing across, and sowed wheat upon it! Vast numbers of the roots of the clover were turned up, and were left standing erect above ground all over the field! Here was unnecessary labor, a useless and even injurious ploughing, by which the manure from those substantial roots, and a good part of the green crop, was lost to the crop of wheat.

"Mr. Singleton of Talbot, a gentleman entirely to be depended upon, says, while walking in his wheat-field, he was surprised to find that the crop was much superior on the worst part of the field, *where the soil was the poorest and thinnest*; it being taller, with stronger straw and larger ears. This part of the field had been in clover, which was *twice mown*, and, in August, it was broken up and sown with wheat the first of September: the other part, *the best land*, had the clover broken up in March for tobacco, but this crop being laid aside, the land was *repeatedly ploughed in the summer as a fallow*, and sown also on the first of the same September with wheat—the yield from which was fourteen bushels and a half per acre, when the part which had been twice mown and but once ploughed, gave *twenty-four bushels and a half per acre!* This difference is great, if we *add* the value of the clover crops, and *deduct* the expense of the summer ploughings, and abundantly proves the superiority of wheat on one earth."

EDMUND CROSS.

SEPARATION OF LIME FROM MAGNESIA. BY J. W. DOBEREINER.

Translated for the Journal of the Franklin Institute, from the Journ. für Praktische Chemie.

If anhydrous chloride of magnesium be treated in contact with air, oxygen is absorbed, and the chlorine abandoned. This decomposition, that is, the transformation of chloride of magnesium into magnesia, is now prompt and complete when chlorate of potash is used instead of air.

This property renders the separation of lime from magnesia very easy. Dissolve the compound of these two bodies (e. x. *delomite*, &c.) in hydrochloric acid; evaporate to dryness; heat the dried mass in a platina capsule till the acid vapors clear, and add to it, urging the heat to commencing redness, small portions of chlorate of potash, until there is no further disengagement of chlorine. The remaining mass is then composed of chloride of calcium, magnesia, and chloride of potassium, the separation of which is easily effected by treating the mixture with water, filtering the solution, precipitating the filtered liquor by carbonate of soda, &c.

* This is easily accounted for; wheat roots deep, but barley forms its roots near the surface, and subsides with the earth, without injury.

TROPICAL PRODUCTS OF THE FLORIDA ISLETS.

Extract from the Magazine of Horticulture.

July 12.—The mail schooner Hayne has arrived with your June number of the Magazine. I had hoped to see in it some extracts from my manuscript in your hands, especially under the headings of "Tropical Products of South Florida," where every thing is tropical: not merely its botany, but its zoology, is exclusively tropical phytology. Conchology, icthyology, ornithology, are tropical subdivisions of its tropical zoology. I renew and extend my proffers of gratuitous collections at Indian Key, as long as I remain there. Mr. Howe writes to his nephew at Lowell, Mass., that he will supply barrels of products to his order, in Charleston or New York. He will also send to you by the present packet, on her return, some ripe fruit of the Manilla mulberries, of the second crop this year. You have already some berries of the first crop, in February, and you will soon have some berries of the second crop in June or July. The fig trees do bear two full crops on this coral rock; but the present crop of the Manilla mulberries is our first evidence that they may also bear two annual crops. You will perceive that the sum and substance of his desires, and of my desires, embrace the speedy emigration of agricultural settlers of virtuous habits. We mutually wish to exhibit solely the *facts*, which should excite immediate emigration of sober cultivators of profitable plants. The pre-emption laws of the United States have sufficed for the settlement of all our other new territories, and would have sufficed for the settlement of South Florida, had it not been subjected to the monopoly at Key West, ever since the exchange of national flags in 1822. Nevertheless, the first emigrants next autumn, from October to December, can probably employ themselves in the propagation of the Manilla silk mulberries and the sea-island cotton shrubs, because the cuttings of the former, and the seeds of the latter, can be obtained cheaply and abundantly. I have obtained, expressly for *gratuitous distribution*, six bushels of select seeds, of the finest sea-island cotton, and they will be planted at intervals this summer, to create an ample supply for all emigrants in the autumn or winter ensuing. I have to use the words of the north, called autumn and winter, although we have not the seasons of the north.

To illustrate how little our national senators are acquainted with the climate and soil of South Florida, I refer you to the opposition of Hon. C. Clay, of Alabama, to the congressional act for the introduction and propagation of tropical plants: "For aught he knew, the grantees might select a township valuable enough for the cultivation of sea-island cotton." Indeed! he was not aware that every acre of the calcareous earth of South Florida is the most valuable in the world, both in soil and climate, for the cultivation of sea-island cotton. He was not aware that the grantees could not select a single acre which was not valuable enough for the cultivation of sea-island cotton. He did not know that sea-island cotton was introduced into the southern states from the neighboring Bahama Islands. He does not know that on the Florida Keys it is a perennial plant of many years' duration—that Mr. Howe has plants at Duck Key from

seed sown eight or nine years ago—that at Key Vacas there is a shrub of sea-island cotton in bearing ever since 1823. He does not know, and cannot conceive, that, *for this very reason*, it cannot be profitably cultivated by large planters with numerous slaves; and that, *vice versâ*, it can be most profitably propagated by small cultivators with feeble families. Indeed, it will be a more profitable business for family occupation than even the silk mulberry, in South Florida. The principal recommendation for the production of silk in South Florida is the fact, that it can be produced at any hour when the person or his family has not any thing better to do. But silly must he be who shall pluck leaves, to feed silk-worms, during the same days that he can pluck pods of sea-island cotton.

DEATH OF DR. PERRINE.

The foregoing extract derives a melancholy interest from the fact, now known to our readers generally, that within a few days after it was written, its author fell a victim to the Seminole savages, who invaded and sacked Indian Key, and butchered such of its helpless inhabitants, of every age and sex, as could not make their escape. The lives of the wife and young daughters of Dr. Perrine were almost miraculously saved. He was shot, while speaking (in Spanish) to the Indians, and probably in the hope of diverting their attention from the escape of his more helpless family. His bones were afterwards found among the ashes of his house. With his corpse, the flames destroyed his numerous manuscripts, and his valuable botanical and other collections. Indeed, all the fruits of his patriotic and benevolent labors have perished with him, except the reputation earned with the few who have fully appreciated the value of his long-continued and unrequited exertions for the benefit of his country and the human race.

For many years, and through the prime of his life, Dr. Perrine had devoted all his energies and talents to the one dearly cherished object of extending the growth of valuable tropical plants, by gradual acclimation, into the colder temperate region of the United States. The continued progress of the savage war was the latest and greatest obstacle to the fruition of his hopes, and it forbade his even touching the designed scene of his operations, on the southern part of the mainland of Florida. In the mean time, while waiting for what seems farther off than ever, the overcoming and removal of a handful of hostile savages, by all the power of the arms and the treasure of the United States, he attempted to carry on preparatory operations by a residence at the nearest point deemed safe from the murderous attacks of the Seminoles. But illy placed was this confidence, and most disastrous the result. Indian Key, though separated from the main-land by 30 miles of sea, was invaded by a body of Indians, in canoes, and attacked in the sight of an American vessel, and plundered, and every house burnt, after the putting to death every person who could not escape. This was not all. The Indians kept possession of the island as long as they pleased, and long enough for them to be attacked by, and to defeat and drive back, a small military force of the United States army, armed with artillery, from an adjacent island. The horrors and disgraces of this war with a few hundred savages increase instead of diminishing, after years of duration, and after sacrifices made by this country beyond all precedent, or what would previously have been beyond all belief.

The following extract from a southern newspaper presents some of the particulars of this last act of the Florida war.

"About two o'clock, on the morning of the 7th inst., a Mr. Glass, in the employ of Mr. Houseman, happening to be up, saw boats approaching, and informed a person in the same employ, when they passed into Mr. Houseman's garden, and were satisfied that they were boats containing Indians. The Indians commenced their firing upon the houses of Mr. Houseman and Dr. Perrine; the former of whom with his family, and that of Mr. Charles Howe, succeeded in escaping to boats and crossing over to Tea Table Bay. The family of Dr. Perrine passed through a trap door into their bathing rooms, from whence they got into the turtle crawl, and by great effort removed the logs and escaped to the front of Houseman's store. They went to a boat at the wharf, which six Indians—all who remained—had partly filled, and were in the store after a farther supply. They then pushed off, and pulled with an oar, a paddle, and two poles, towards the schooner Medium. They were met by a boat when they had rowed a mile, and taken to the schooner.

"Mr. Motte and wife, and Mrs. Johnson, a lady seventy years of age, fled into an out-house, from whence Mrs. Motte was dragged by an Indian, and while in the act of calling on her husband, "John, save me," she was killed. Mr. Motte shared the same fate, and was scalped; and the old lady as she was dragged forth, suddenly jerking from the Indian, broke his hold and escaped under a house. Her grandchild, a daughter of Mrs. Motte, aged eleven years, was then killed with a club, and the infant strangled and thrown into the water. This was seen by Mrs. Johnson from her hiding place; but the Indians fired this building, and she was again forced to flee, and escaped to Maloney's wharf, where she secreted herself, and was finally rescued. A. Sturdy, a boy about eleven years of age, hid himself in the cistern under Mr. Houseman's house, and was scalded to death by the burning building heating the water. The remains of an adult skeleton were found among the ruins of Dr. Perrine's house, supposed to be the Doctor, as well as a child, thought to have been a slave of Mr. Houseman."

THE MASSACRE AT INDIAN KEY.

[After the foregoing article was ready for the press, we received from Mrs. Perrine the following account of the escape of the family of Dr. Perrine.—Ed. F. R.

From the Wayne (N. Y.) Sentinel.

Mrs. Perrine and her three children, two daughters, (young women,) and a son, about 13 years of age, survivors of the dreadful massacre at Indian Key, Florida, on the 7th of August last, arrived here on the night of the 5th instant, in comparative good health. Their intense sufferings and miraculous escape, are among the most thrilling incidents upon the annals of Indian warfare, in our country. We doubt whether, for self-possession, cool determination, and daring bravery, under such appalling circumstances, an equal can be found on the records of female heroism, in ancient or modern times. A special Providence seems to have inspired and directed them, and by its unseen power, rescued them from an awful death. The facts as we learn them from the family, are as follows:

This Key is a small island off the south-east coast of Florida, containing only about 12 acres of land, and 5 families, in all about 60 inhabitants. Around Indian Key, are a chain of keys on the north-west, extending towards the main land, the most noted of which is Matacumba. This is distant from Indian Key about one mile, and extends to within 20 miles of the peninsula or main land, being the nearest point from any of the keys in this direction. Owing to the distance from the main shore, and the known habits of the Florida Indians, during the present war—scarcely daring to venture beyond the confines of their own impenetrable swamps and fastnesses—and from the fact that a small force was stationed on one of the group—Tea Table Key—which was also made a naval depot, the idea of security was never interrupted, nor the thought or possibility of danger entertained. The inhabitants there were as careless and unconcerned as in the most profound peace. But, alas! the infuriate savages—those demons in human form—like their counter-part, the spirit of evil, choose for their victims the most unguarded—those least prepared to resist. They spring from their jungle upon the innocent and unsuspecting, like the tiger upon his prey. There is but one onset, and the bloody work is done.

In the attack upon this island, it was the plan of the Indians to strike but one blow, and make that decisive. They approached it at an unusual point, where it was deemed inaccessible.—They were about 80 in number. It was their plan to divide their force, and make a simultaneous attack upon every house on the island, and cut off at once every possibility of escape; but fortunately, their presence was detected before their hellish purpose could be executed. Two laborers of a Mr. Houseman, who for some reason were abroad, (it being about 2 o'clock in the morning,) first discovered the canoes of the savages,) 17 in number, drawn up on an obscure part of the island. There could be but one explanation to this strange appearance: that was quickly apprehended by the workmen. Indians were present, and death and plunder could be their only objects; and they were soon discovered, in their skulking attitudes, filing for the different houses—the inmates of which were all enjoying their quiet slumber—little dreaming of the impending storm that was about to burst upon them. The alarm was instantly given, and in a manner so as to frustrate, partially, the designs of the savages, and by the providence of God, a part of the devoted victims, snatched from swift destruction, were permitted to escape their intended doom. But as a full account of the bloody tragedy is intended to be given from another source, we shall confine our narrative to the part acted by the family of Doctor Perrine.

At the time of the attack, the family were sleeping in the second story of their dwelling, and the lights, for the first time in a number of nights, had been extinguished. Mrs. Perrine and her eldest daughter were still invalids, having been indisposed and confined to their rooms for some weeks previous. The first intimation of danger, was the savage war-whoop, and the discharge of rifles, accompanied by the falling of the glass, as the shots passed through the windows around them. This was an awful change in the quiet stillness of that hour; but the family at once realized their perilous situation. The danger was too near at hand to admit of a doubt—too startling and sensible to be imagined as a dream, or an illusion of the fancy.

It appears that the dwelling of Doct. Perrine was situated on the edge of the island and constructed upon a pier, so that a part of the house extended over the water. On the top was a cupola and underneath a cellar and a room used for bathing and connected with the cellar by means of a trap door. From the bathing room there was a narrow passage under the pier leading to the outer edge of the wharf, made to admit the influx of the tide to the room. The passage and room were now nearly filled with water. At the end of the passage and extending out even with the pier above, was a large turtle crawl, constructed by driving palmetto posts or piles deeply into the marl beneath.

Upon the alarm and yell of the Indians the family instantly sprang from their beds and sought concealment in this bathing room. The Doctor having conducted them hither, left them at the door, telling them that he would return and speak with the Indians, and see what he could do. He had no means of defence. His repeating rifle and pistols were useless to him, as he had no caps for either. His only hope was a parley with them, and with great deliberation he ascended again to the top of the house and called to the Indians in Spanish, (these being of that tribe known in Florida as the Spanish Indians,) and told them that he was a physician, and they must spare him. It had the desired effect for the moment. They listened to his words, gave a shout, and turned their attacks upon other dwellings in the vicinity. The Doctor then descended, drew a large seed chest over the trap-door that led to the bathing room, thinking, no doubt, by secreting his family, he should be able to manage the savages and save himself and them from destruction. He then returned to the cupola, and shortly after the attack was renewed by the Indians with a determination not to be again diverted from their purpose. Seeing that he had nothing to hope from them, his

object then appears to have been to fasten the massive trap-door by which he ascended the cupola, and prevent their access to him, or knowledge of his situation. But they burst into the house and forced their way to his retreat, and from the fiendish yells of the exulting monsters, the family suppose his horrid butchery was here completed. The savages then fired the house upon the top and commenced their search for other victims and plunder. Mrs. Perrine and family at this juncture retreated from the bathing room through the subterraneous passage leading to the turtle crawl, and sought that as the only refuge for a moment's safety. In this place, in each other's arms, the mother and three children, with scarcely their heads above the water, lay for nine long hours, still as the reigning silence of the grave, awaiting their fate. The savages for a long time were upon the planks over their heads, performing their hellish orgies and glutting over their plunder, and even hoisted a plank and looked down towards them, but as Heaven would direct, the objects of their search were undiscovered! In the mean time the house was burning to its foundations. The plank also over the turtle crawl caught fire. The smoke and heat from the burning house and other objects were becoming so intense that death from this cause seemed inevitable. Life was supported for some time by dashing water in each other's faces, to keep the air in motion, and by plastering their heads with marl from the bottom of the crawl to ward off the scorching heat. At length it became so oppressive that Henry, the young lad, could bear it no longer. His mother endeavored to prevent his screams by clasping his mouth with her hands, but he tore away from her, declaring that he preferred death by the tomahawk rather than in that terrible place. He made his escape through an aperture of the turtle crawl, but which was too small to admit the egress of the others, who were now sensible that an adventure offered the only chance of life. There was now no way of escape except by a removal of one of the deeply imbedded piles with which their retreat was constructed. This could only be done by removing the earth at the bottom which was far under water. Mrs. P. set herself about the task and accomplished it just in time to avoid the falling timbers under which they had been sheltered. There were six huge Indians at this time plundering Mr. Houseman's store a short distance from here. Near the store was a launch, or small boat drawn upon the wharf which they were filling with their spoils. Mrs. Perrine and girls approached the boat—having to wade through the water in full view a hundred yards to do so, (while the savages had returned to the store after other articles of plunder)—beckoned to them the boy, (of whose fate they had been uncertain,) who was standing close upon this den of murderers, and by their united strength and the most desperate efforts, succeeded in tearing it from its fastenings and dragging it into water of sufficient depth for it to float. They sprang in, and, with one paddle, one oar, and two poles, exerted as it were the last energies of life in widening their distance from the ill-fated shore. By the blessing of GOD they made their escape. They were not discovered by the Indians until beyond the reach of their deadly rifles. A pursuit was attempted, but the fortunate appearance of a schooner deterred them from persisting.

When we consider that during all this time, one of the young women was not only helpless, but had to be borne by the strength of the others, and that Mrs. Perrine, herself, was absolutely ill, the determined fortitude, the cool calculation, the great feats of strength, the daring adventure and wonderful escape from butchery and the flames, appear so striking as to almost stagger human credulity.

The destitute fugitives were taken up by a boat from the schooner Medium, Capt. Magee. Their situation must have been truly distressed—having been nine hours in the mud and water at the Key—and some three hours exposed, with nothing but tattered night-clothes—if by this time they even merited that name—to the burning rays of a tropical sun, they were literally wasted alive. They wish to express their grateful acknowledgments to the captain of the Medium, and his officers and crew, for their gentlemanly and generous conduct, upon this trying occasion. They wish also to express their deep-felt gratitude to Captain Laughlin, of the "Flirt." His obliging kindness, and that of his men, will long be held in remembrance by the sufferers. On board the Santee steamer, in which they reached St. Augustine, every kindness and attention were paid them, which their wants and destitute situation required. To Doctor McCreary and Midshipman Murray, of the naval depot—Tea Table Key—and very many gentlemen of Key West, they feel under weighty obligations for their attention and kindness. They cannot refrain from a special acknowledgment of their gratitude to Doctor Edward Worrel, of the U. S. A., who accompanied them from Cape Florida to Philadelphia, and treated them in the most praiseworthy manner. And they wish to say to their friends generally, that no pains have been spared wherever they have been, among strangers or acquaintances, to mitigate the burthen of their sufferings; and that they have reached their destination in safety, and are happy thus to acknowledge the numerous favors heaped upon them, and their gratitude to an overruling Providence, whose protecting hand so signally shielded them in the hour of trial and danger.

THE MANY-HEADED WHEAT.

The many-headed wheat is an indigenous plant of California, six heads of which were procured by Major Spering, from a man in the Osage nation of Indians, who had been trading in the Pacific Ocean. The six heads produced six hundred grains, which were planted by Mr. Pipheus Baker, of Abbeville, S. C., the production of which was ten thousand heads. The ground on which the wheat grew was measured by an accurate surveyor—the heads counted—and one head shelled out, and the grain weighed; a calculation was then made, the result of which was, the wheat produced at the rate of two hundred and thirty bushels to the acre. It was planted about the last of January, and cut on the 20th of June. The land on which it grew is poor and sandy, and was unassisted by manure.—*Wilkes County (Georgia) News.*

[From the above annunciation, the public may look out for a new humbug. It is certainly a mag-

nificent subject for one; and, if in proper hands, Grant Thorburn's, for example, might prove of great value *to the seller of the seed.* An adept in the business would ask a dollar a grain for this precious wheat, which produces 230 bushels to the acre, on poor, sandy and unmanured land.—ED. FAR. REG.

ANTI-MAGNESIA.

From the Farmers' Cabinet.

I have taken the Farmers' Cabinet, from the commencement, with a desire of receiving information respecting the use of lime for agricultural purposes; and by perusing the pages thereof, I find there are various and conflicting opinions respecting its use. There are those who are of the opinion that 25 bushels to the acre are a sufficient quantity, and others that 50 to 150, or more, are not an overdose. In England, I understand, as much as 500 bushels per acre are applied, and yet I have never read of its being an over quantity. The soil and climate there may possibly have some share in preventing an injurious effect upon vegetation, but I consider the principal cause is *in the quality of the lime*, although I may be mistaken. Having read an article on the value of lime as a manure in the third volume of the Cabinet, continued from page 14 to 17, where it is stated that the effect of the lime in producing vegetation was as instantaneous as barn-yard manure, and superior thereto,—it put me to thinking whether the account was correct. But, considering that the limestone contained 93 per cent. of carbonate (of lime I suppose) and, of course, little or no magnesia, or other poisonous qualities, it must be something superior to the generality of lime used in this country, and, from those considerations, I concluded the account might be correct. It is a question with me, whether the lime that is the most profitable for making mortar is the most valuable for agricultural purposes; it may be that a portion of magnesia in lime is of use in making a cement, and worse than unless in agriculture, for it is injurious to the growth of vegetables.

Any person having poor worn-out land, and wishing to improve it, and being located within 10 or 15 miles of lime, I advise him to lime, it will pay therefor; but I do not mean lime containing nearly half magnesia. As an instance of the effects of lime, I will mention only one, but it is sufficient for my purpose: I, in company with another person, took lease, in the spring of 1820, for the term of ten years, of a farm containing something more than 160 acres of land, 100 acres cleared, and commenced liming; (we hauled the stones about 11 miles and burnt them on the spot) and, during that term, we put upon the farm *thirteen thousand bushels of lime*, and cleared, free of all expense, thirty-five hundred dollars, principally by selling grain; and changed the said farm from one of the poorest, to one of the best in the neighborhood, although during the first years (as the saying is) we hardly cleared our teeth, owing to the unproductiveness of the soil before liming. It has long been a question with me, how sulphate and carbonate of lime act on vegetables: It was formerly the opinion of many, that the use of sulphate in agriculture was its attracting powers; now, since the experiments of H. Davy are becoming known, the opinion is changing, and its use is that of entering into the composition of the vegetable; and it may be possible that it is of no direct use to any vegetable, but when it composes a part thereof; and carbonate may act something similarly; by heat, the water and carbonic acid are burnt or driven off, and the stone is changed into an oxide, and by the addition of water it becomes an hydrate, and then it has a powerful attraction for carbonic acid; and, after having received its portion of carbonic acid and water, in my opinion, it becomes soluble, and is taken up by the roots of vegetables and enters into their composition, for vegetables are composed principally of carbon and water. I consider the more soluble carbon there is in any soil, the more food for vegetables that soil contains.

I think I should not have put pen to paper, if I had not read in the Cabinet, for April, an instance recorded of the injurious effects of lime, from the testimony of my friend M. S. K. of Morrisville, and having been informed that there exists limestone on the canal, or nigh thereto, above Newhope, highly impregnated with magnesia, so much so, that I consider it unfit for agricultural purposes; and, thinking that the lime used by M. S. K. might possibly come from thence. I know of nothing that froms a part of what we call limestone, pernicious to any soil except magnesia; but we ought to be cautious how we use lime before we know its qualities.

ANTI-MAGNESIA.

Lancaster County, 7th mo. 14, 1840.

OLD WHEAT FOR SEED.

In a recent conversation with Mr. William Skinker of Fauquier, an old and experienced farmer, he mentioned that, for experiment, he had sown a few bushels (from 4 to 10) of wheat of the previous year's crop, in each of his three last seedings, and that he had found the product of the old wheat always much better than that of the new wheat sown adjoining. Indeed, he thought the increase to be not much short of 100 per cent. He could not assign any other reason for the superiority, except that by keeping the seed wheat a year longer than usual, the imperfect grains might lose their vitality, and leave nothing to grow except those of the best quality. We think this totally insufficient to produce the manifest superiority which we are confident Mr. S. saw, whether he was or was not mistaken as to its amount. But the experiment is worth repeating, and we hope it will be repeated by as many of our readers as can conveniently obtain old seed of good wheat.

A year ago we heard stated, by a gentleman of Cumberland, a still more remarkable fact, which had been recently observed in that county. A farmer had sown a few bushels of old seed along-

side, or perhaps between, the sowing of the balance of his field with new seed. There was no difference between the adjoining parts, except as to the age of the seed. No experiment had been designed, nor was any difference expected; but the result was that, while the crop from the new seed was greatly injured by the Hessian fly, that from the old seed escaped entirely. Our informant understood that there was no doubt of the existence of this remarkable difference, in the minds of all who saw its growth, and that every effort was making to obtain old seed to sow, for experiment, for the last crop. We begged to be informed of the results of these later trials, but have heard nothing more on the subject; and thence infer that the hopes entertained have been disappointed.—ED. FAR. REG.

CALCAREOUS EARTH FOR MANURE IN LOUDON COUNTY.

To the Editor of the Farmers' Register.

Belmont, Loudoun Co., July 29, 1840.

Through the kindness of Mr. Strachan, I send you a few specimens from a calcareous deposite found in this neighborhood. It occurs at the bridge over Goose creek, and can be traced from the bridge, east, for a distance of two miles on the side of the public road, and north of the road to the Potomac—in ravines and on the banks of the streams flowing into the Potomac. Mr. Wilson, of this place, a plain sensible farmer, on whose land it is found in considerable quantity, has submitted its fertilizing properties to the best of all tests—actual experiment. A wheat field was spread with this earth last fall—he thinks with decided success. He also showed me a field in pasture, a portion of which was treated in the same manner. It was staked out in two lots, leaving an intermediate space, on which none of the earth was laid. There is a perceptible difference in favor of the calcareous earth. Though I have entire confidence in Mr. W.'s statement, yet, as I did not see either of the fields before the experiment, of course I can say but little from my own observation of these experiments.

Of the three specimens sent, No. 1. is of the rock from which the calcareous matter is derived. It is, as you will perceive, a trap or hornblende rock, which is the underlying rock of this place. The upper surface of this rock is disintegrated frequently to a depth of four feet, and in that state presents the appearance of No. 2. This is the earth used in the experiments just mentioned. The proportion of lime is extremely variable, even in specimens taken from nearly the same spot—I have found from 5 to 50 per cent. It is generally found near the surface and interspersed with nodules, such as No. 3. These nodules are evidently formed by concretion from the lime set free during the disintegration of the rock. They are not at all friable, and, I suppose, would require grinding or burning before they could enhance the fertilizing property of the earth. They constitute, however, the richest portion of the deposite. A basket-full of these nodules sent me last winter, gave 30 to 75 per cent. of carbonate of lime.

I am not certain that the value of this deposite as a manure is sufficient to justify its being used at any considerable expense. As a geological formation, it is full of interest. Hornblende rock is known to contain lime, but I have never seen the proportion of lime so great.

Should you know of any instances in which a similar deposite has been used as a manure, an account of the manner of treating it would be highly useful to those interested here.

Truly and respectfully yours, &c.

M. TUOMEY.

REMARKS ON THE FOREGOING COMMUNICATION. EDITORIAL PUFF DIRECT.

The discovery of the deposite described above is a more interesting fact than our friend, who has investigated it, was aware of, inasmuch as the like calcareous products have been before found in other and remote localities, thus showing the formation to be extensive, and probably of great agricultural value, instead of presenting a singular and isolated fact. In the first number of the first volume of the Farmers' Register is a full and minute description, given by Dr. W. S. Morton, the first discoverer, of a like calcareous earth, and of a region of valuable natural soil, deriving its peculiar qualities from this earth, in Prince Edward county, and extending much beyond the limits of that county. Lately, specimens of stony nodules, manifestly the same as these, were sent to us for examination from the coal region of Chesterfield. The appearance of these nodules is so peculiar, and the specimens from all these remote localities so precisely alike, that they clearly show a common origin and formation. Immediately after receiving the foregoing letter, we sent to its writer a copy of Dr. Morton's former communication; and from the minute description there given, even without the opportunity of comparing specimens, as we had, Mr. Tuomy was satisfied of the identical kind and origin of the two deposites. In his answer, (of Sept. 18th,) he says—

"The deposite described by your correspondent must be similar to this—the "black rock" of which he speaks, being, I suppose, hornblende. When these nodules were brought to me, I concluded that the deposite in which they were found was connected with the celebrated calcareous breccia, (Potomac marble) of the Potomac, which terminates after crossing the Potomac about 5 miles from this; but on examination, I can find no such connexion, the deposite being invariably associated with the hornblende rock of which I sent you a specimen."

For more full information, we would have here republished (from vol. i.) the interesting communication from Dr. Morton, together with the accompanying statements of analyses of the specimens, but for the length of the pieces, and also

because it would violate a general rule, which both propriety, and justice to our old subscribers, make it necessary to observe. We frequently have inquiries made which have already been fully answered by articles in some of the earlier volumes of this work, and which could not be again more satisfactorily answered than by a republication of the same. Such republications also would be as interesting and useful as any thing we could furnish to those who had never seen them before; and the plan would be a great convenience to the publisher. Nevertheless, those who would be the gainers by such a procedure must see that it would be unjust thus to present again to all of our oldest subscribers, who have paid for the Farmers' Register from its commencement, articles which they had before received and paid for. Yet, in declining to make such republications for the benefit of new subscribers, we have no other alternative course than to refer them to the older volumes containing the information, and which course has much the appearance of being used as an indirect request to them to buy the volumes so referred to. And the fear of this construction being placed, has rendered it (in that respect) disagreeable to us to refer to old articles, or to recommend their perusal to later readers. But having been thus drawn to make this explanation and apology, we will dare to go farther, and say, once for all, that every subscriber to the present volume of the Farmers' Register, who values the work, ought, for his own interest's sake, to buy the earlier volumes, and complete his set. For the reasons and because of the procedure stated above, each volume contains matters different from all the others, and without which all the others would be very deficient. And we will presume further to say, that there is not one of the volumes, the perusal of which would not be worth to any intelligent and improving cultivator more than the price of the entire series. Of the first volume, a second edition of 500 copies has lately been printed, at a cost (because of the small number and the * ill smaller demand) far exceeding the price at which the volumes are sold. Of other earlier volumes, there remain only enough to furnish about 150 complete sets; and, with the experience of the past, we have no expectation of being induced hereafter to reprint any more. Therefore, all later subscribers who desire to complete their sets, should hasten to do so while it yet can be done.—Ed. F. R.

WORMS IN PEACH TREES.

From the Boston Cultivator.

Mr. Haskell says he has taken the peach worm from the roots of his trees, and confined him under a glass until he turned to an insect. He feels confident that the worm which comes from the nits of this season, turns to an insect during the next—therefore if we kill the eggs or the nits at this season of the year, when they will be found on the bark of the tree, we need be at no trouble to dig out the worms from the body of it.

One mode of killing these eggs is to pour scalding water on to the body of the tree—and if it is two inches in diameter we need not fear to turn on a quart or two. Strong ashes put close to the body will kill the eggs. Strong lie applied with a swab is as good as any thing—but we should never cut out these worms with a knife. Let them turn to flies and we can then destroy their progeny in the egg.

Mr. H. says the insects that come from this worm of the peach tree resemble the mud wasp.

AID OF THE LEGISLATURE AND OF AGRICULTURAL SOCIETIES REQUIRED TO IMPROVE THE CONDITION OF POOR CULTIVATORS.

To the Editor of the Farmers' Register.

Will you not revive the proposal to establish a board of agriculture? Could we not have, as in New York, a state agricultural society? And if so, might not the plan succeed well of holding its meetings in different portions of the state—going regularly through from year to year, until the circuit of the whole should be completed?

And when the presidential election is over, the multicaulis fever having passed away, and ——— * become as plenty as blackberries, would it not be a favorable time again to press upon that class of our population who ought to be silk growers, the expediency of turning their attention to it? No one in this state, so far as I know, has given that subject half the attention you have, or done half so much to awaken our people to their true interest, as connected with this important branch of domestic industry. But, unfortunately, the Farmers' Register does not reach them, nor indeed any other paper from which they might derive information so important to them. Few of its subscribers, I apprehend, put it into the hands of their poorer neighbors, who are unable themselves to subscribe for it, or impart to them the valuable information it contains.

As to the production of silk, it seems to me that its greatest value, as well in a moral as pecuniary point of view, will be found in the employment of those, both old and young, who now are consumers and idlers only—not producers. But with the poorer class of our people, there exist difficulties, insurmountable by themselves alone, which might be removed by public-spirited individuals who have wealth and leisure, or by the state. Do not start at the reference to her—I am not now, nor was I ever a tariff man. But I cannot con-

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* This word in the manuscript was entirely illegible, and its shape did not admit of even a plausible guess, which of course it is the editor's duty to hazard in all such cases, and afterwards to bear all the blame for guessing wrong. Therefore a blank is left, which the reader may fill, according to his political or other inclinations, with either the word "money," or "credit," or "paper," or "morus."—Ed. F. R.

ceive how the aid which the state might afford, and ought to give, to bring into action the dormant industry of her own people, can fairly be placed upon the same ground with the national tariff policy.

The difficulties I have referred to, have no doubt fallen under your own observation. Take for example the population around and within reach of the cities and towns—many of them are to be seen either in the markets with melons or scanty supplies of ill-cultivated vegetables, or driving about a small load of wood for sale. On inquiry it will generally be found that nine-tenths of them are small landholders, have families, and, with the usual fortune of the cabin, pretty large ones too. In regard to the venders of wood, that the father of the family derives their sole support of his family (and a scanty one it is) from the wood cart, that *his* father, and grand-father, if he had one, did the same thing, having neither in the present or past generation the remotest idea of improved agriculture. That each one has at home a larger or smaller number of half grown boys and girls; three or four of whom may occasionally be seen accompanying the cart to town. The necessities of the fathers leave the children to grow up in ignorance, often in idleness; he has not the means to educate them, nor time to attend to their habits or morals. How much labor is lost in these cases which might be most profitably and *happily* employed in producing silk—how much idleness and vice are left to keep out industry and virtue, by leaving these poor people to drudge through life, generation after generation, without one effort to help them! Talk to the father—tell him of the advantages he might derive by directing his attention and employing his children in silk growing, which in a few months will produce him more than years of his present drudgery, at the same time that it will render them all more comfortable, and enable him to impart to his children the blessings of education—and in a very large majority of cases he will be found willing and anxious to make the trial. But the daily bread of his family which he has got all his life by the market or the wood cart, where is that to come from while he is learning to produce silk and encountering the first difficulties of a new occupation? And the question is a natural and reasonable one. But if a helping hand be held out to him; if he can be sure of his subsistence until he can rely upon the new occupation for it; every industrious and temperate man of them will readily become a silk grower. How strong an appeal is here, to the wealth and intelligence which every county and town of the state contains! Could the wealth and the time of those who have both at command, be more nobly employed than in such a cause as this?

I have mentioned one description only of our people; but there are thousands of the same description, though subsisting differently according to circumstances, all over the state; and it is incumbent upon those who are in better circumstances, to do what they can to improve their condition. In time of war, if the man of wealth be drafted for service, he can hire a substitute; but if the lot falls upon his poorer neighbor, whose family depends upon his labor for support, and on his presence for protection, *he* must shoulder his musket and take the field, for he has no means to hire a substitute. There have been many such cases; they are inseparable from the various circumstances in life; and I do not speak of them in the detestable spirit which seeks, for unworthy purposes, to array the poor against the rich, as you will do me the justice to believe. The hardships incident to poverty claim, and they have, the sympathies of those in comfortable circumstances. But this is not enough. Cannot and ought not the wealth and intelligence of Virginia to associate for the purpose of encouraging the production of silk by the poorer class of our people? And how can this be best effected? Is it not practicable to form a society in every county east of the mountains, who might raise a fund by general subscription according to the ability of its individual members, to be applied not as a gratuity, but as a premium to the industrious poor, upon their labors in the silk culture. To the collection and diffusion among them of the requisite information in regard to the whole process of feeding the worm, reeling and preparing sewing silk, &c.; in short, every thing which might be necessary to enable them to derive the largest profit upon their industry. If but one family in a neighborhood could be got successfully under way, others would soon follow, until in all probability thousands of females and children who are now unable to earn a subsistence, would be rendered comfortable and happy.

I say nothing of the useless portion of our colored population, some of whom are to be found upon almost every farm in Virginia. If their owners are content to maintain them in idleness, that is their affair; and though considerable profit might no doubt be drawn from the employment of elderly and young slaves in this business, the important benefits of employing *them*, would be nothing in comparison with that which would flow from a general diffusion of this branch of industry among the class of our white population I have mentioned.

While in Philadelphia, about 12 months ago, a gentleman of that place, who has travelled all over Europe, is a man of accurate observation and extensive information, remarked to me in substance, "that Virginia ought to be a great silk growing state. You have," said he, "greatly the advantage, especially as regards climate and labor; yet the northern people will beat you at it, under all the disadvantages of a worse climate and dear labor; and so far from employing that portion of your slaves who now do nothing, in this most profitable branch of industry, I doubt not that in two or three years the Yankees will be going over your state, and wherever a plantation of mulberries is to be found, feeding the silk-worm in shares with the proprietors, by means of the same useless negroes that you ought to employ in it yourselves. And it will be better for you than the present state of things, though not so well as if you would do it for yourselves." He remarked that the speculation in morus multicaulis was at an end; that with many, neglect and indifference to the proper use of the plant, would for a while succeed it; but that depressing causes would after a while disappear, and ours become a silk growing country—the most important results of which would not consist in the establishment of great companies and cocooneries, but in its more general diffusion as a branch of household industry.

I wish I could give you his observations in full,

but as I cannot, and you have by this time no doubt found this long scrawl a sufficient bore, I will not trouble you farther, than to apologize for writing to you (I can scarce say why) upon a subject with which you are so much better acquainted than any one I know.

INCREASING DEMAND FOR CRANBERRIES.

From the Yankee Farmer.

One company sold last year *six thousand* dollars worth of cranberries for one market, New Orleans. We are informed that this article now sells in this market for three times as much as it did fifteen years ago. There is a great call for cranberries for the southern market, and they are excellent for ship stores. The cranberry is one of the most wholesome and palatable of fruits, and it can easily be preserved for a long time.

Many persons have good advantages for the production of the cranberry or for increasing their crops by good management and cultivation. Four acres of land, conveniently situated for the advantages of this market, were offered for 60 dollars, four or five years since; lately five hundred dollars were offered for this land. The increased value is principally owing to its producing cranberries. The crop sold last year for 400 dollars.

LIME AND MARSH MUD.

From the American Farmer.

A gentleman distinguished for good and great qualities, tells us, that on a sandy soil, he has found lime a powerful fertilizer. A poor field put in corn —yield 10 bushels—followed by oats—crop light —succeeded by wheat—yield not more than the seed—limed, and next crop gave 40 bushels to the acre. Experience has taught him the great value of *marsh mud*, especially when used in combination with a small quantity of lime. Keeps a small force specially assigned to the collection of marsh mud, weeds, leaves, mould from the woods, &c., and is amply compensated for it—cannot too highly recommend the use of marsh mud—has covered several acres with *brushwood*. The fertilizing effect very obvious, and thinks poor land may be reclaimed by a covering of brushwood, very speedily, and with great economy as to the labor and the results—is very careful to have all brush not large enough for firewood, even the pruning of his orchards, reserved to be spread upon the most exhausted portions of his land.

EXPERIMENT OF SILK-WORMS REARED IN THE OPEN AIR.

[The early part of the following experiment was stated in our notices of the Cape Fear country, at page 254, of this volume; and we are gratified thus to learn the results. They are fully as good as could have been expected, of worms exposed to all kinds of weather, independent of other disadvantages. This experiment is enough to show that success in rearing silk-worms, unsheltered, and left to feed themselves, cannot be hoped for. Still, if only in deterring from similar attempts, (of which there have already been many made in different forms,) this report will be useful, as well as interesting. Much good would be done to agriculture if many other persons would, as Dr. McRee has done in this case, report the results of unsuccessful as freely as of successful experiments. The one class of reports might save readers and experimenters from as many farming sins of *commission*, as the other class of reports ought to present of sins of *omission*.

As the few survivors of this brood of worms were of course free from all the diseases caused by confinement, and its accompaniments, it seems most probable, as Dr. McRee thinks, that their eggs will produce a more than usually vigorous stock of worms. That question will form for him a subject for another interesting experiment next season, to be used in his cocconery.—Ed. F. R.]

To the Editor of the Farmers' Register.

Wilmington, N. C., Sept., 1840.

You expressed some interest when here last spring, in a rude experiment I was conducting, to test the hardiness of the silk-worm, and especially its capacity to endure cold and wet weather, with the various alternations of the two, to which our climate is so subject at that season. No accurate results were obtained, for want of a knowledge of the exact number of eggs which were subjected to the experiment; but some general facts were elicited not altogether uninteresting or useless. You know the eggs were exposed on the branches of the mulberry trees early in March, and, as well as I could ascertain, most of them hatched out and immediately commenced eating the multicaulis leaves; at this time we had weather so cool as often to produce a white frost at night, and, as well as I could judge, without any prejudicial effect upon the *larvæ*. Severe winds were also common, and, in the last week of March, we had a snow-storm of some severity, the snow whitening the ground, but not remaining over a day on the exposed surface of the ground. All these vicissitudes of weather, with frequent drenching showers of rain, the greater part of the worms seemed to withstand without any apparent injury; and although there was a daily loss from various casualties, I cannot say that I could fairly attribute a greater part to the weather than to these other causes. These other causes alluded to, were the depredation of ants—*perhaps* birds—the worms falling on the ground and feeding on grass, thistles, &c.; for when detached from the leaf and on the ground, they seemed to lack instinct to direct them again to the natural and wholesome food, but seized upon the nearest green herb, (I thought) with perfect indifference as to its character, and as they could not thrive on such fare, they gradually wasted away and died. Many were lost through a most singular defect of instinct; for they would eat away the leaves over their heads till their attachment to the parent stock would become too feeble to sustain them, and they would drop on the ground and perish. I do not mean that they would cut off the petiole of the leaf, but would cut it up into shreds and hang on to the dependent

fragments till their weight would break them off and they would be precipitated to the ground. Maugre all these casualties, and the great exposures to which they were subjected, one hundred spun cocoons, not in the usual time, but occupying, I think, two or three weeks more than the time required when fed under shelter with gathered leaves; nor did they spin as good cocoons as under ordinary circumstances, many of them being thinner than usual. After the first few had spun, finding that they fell on the ground and would spin their cocoons on the fallen leaves and among the grass, I removed them into the house and suffered them to spin there. I think it not improbable that the eggs hatched from these cocoons may produce a hardier race of worms than those raised in the usual way. If I knew how to get them to you, I would be glad to send you half. I will avail myself of the first opportunity of doing so, that you may try them. I did not finish my cocoonery this season in time to operate—but intend commencing operations next spring. JAMES F. MCREE.

CUTTING DOWN AND STACKING CORN.

To the Editor of the Farmers' Register.

Washington Co., Ala., Aug. 19, 1840.

This season I have given the plan often suggested of saving corn, viz., by cutting down at a certain stage of ripeness, and curing in small stacks, a full and fair trial; and I am still more astonished that any other plan has ever been pursued. The astonishing difference in the *labor* required to save a field of corn, to say nothing about "*ruffage*," *manure*, *peas* planted among the corn, &c. The singular capacity of this country to produce a *pea* crop makes it a most important one. I never *cut a stalk* unless the *shuck* is *yellow*. I find no *trouble* in going over my ground the second time. By *drilling* my corn I have no *nubbins*. Just as the peas are beginning to grow off, the corn is in the *stack*. By the way of saving all and losing none, I embraced in all my fields on *all sides* a portion of *wood land;* this strip *while I am making* the crop grows up into a fine *pasture*, and I have it in the fall to put in my cattle, horses, mules, &c., and saves the *crib awhile longer*. In the *edge* of this *strip I stack my corn* until I haul. The *state* of the *peas* enables the wagon to straddle the rows, and no destruction of that valuable crop. If I plant *pumpkins* with the corn, I select small fields from the *centre* of which I can afford to carry in every direction the cut-down corn—the *vines* remain safe. As regards this mode of saving corn crop Mr. Buel will be found sound.

MARLING COMBINED WITH VEGETABLE MANURES.

To the Editor of the Farmers' Register.

Nansemond, Va., Aug. 15, 1840.

As you are anxious to obtain all the practical information you can on the subject of marl and calcareous manure, I have concluded to inform you of what a gentleman informed me of the use that he had made of marl and woods' litter on a very poor sandy piece of land, and what I saw of the crop of corn now growing on the same land. He said a few years past the same lot of land, containing some three or four acres, would scarcely give him any thing for his labor. He concluded to try marl and woods' trash, to see if any thing could be done with it; so he put on from 150 to 200 bushels of marl per acre—the marl he thought very good, though he knew nothing about its precise strength. A short time after the above information I saw the crop of corn, which, to my astonishment, from the appearance of such poor sandy land, was very good, it being green and healthy from bottom to top, and having fine large ears, which I think is the best symptom of a good crop. He also showed me another lot that was much better. I asked if that was the effect of marl alone, he said it was combined with stable and farm pen manure. I should not be surprised if the latter piece should produce from 30 to 35 bushels of corn per acre. I saw another gentleman's farm not marled, not more than a mile from the above, that will not produce 10 nor perhaps 5 bushels per acre this year. A. Z.

MARYLAND STATE AGRICULTURAL SOCIETY.

From the American Farmer.

The first annual fair of this society, took place under the direction of the trustees, agreeably to notice, on the 16th inst., which was considered the best exhibition of stock ever exhibited in Maryland. A large number of farmers presented themselves and became members of the society, many of whom brought with them fine specimens of stock of the various improved breeds. The exhibition of short horn Durham and Devon stock was particularly fine, for which the society were indebted to their owners: amongst whom were Messrs. J. S. Skinner, Richard Caton, John Mercer, George Law, W. Van Bibber, Charles Carroll, A. B. Kyle, Wm. Goll, J. P. E. Stanley, Edmund Gray, Wm. Hughes,——Frazier, and Drs. Stockett and Thomas, &c. That of horses was more limited. There were, however, several fine animals exhibited of stock. In the list of mules there was a very fine team, exhibited by Mr. Goll. Among the sheep exhibited, it was gratifying to find a fine sample from the celebrated flocks of Mr. Barney, of Delaware, of the Bakewell breed. It was much to be regretted, that a lot of sheep of the Southdown breed, belonging to Gen. Emory, arrived only at the close of the exhibition of the day, in consequence of unavoidable detention on the bay, as they were an admirable specimen of that highly valued breed. The fine flock of Southdowns of Dr. Thomas were also, in consequence of breaking away, prevented from being present. There was a fine exhibition of hogs of the Irish, Berkshire, and Ulster breeds, from the pens of Messrs. George Law, J. P. E. Stanley, J. S. Skinner, and Dr. R. Dorsey, which did great credit to their owners. A great, as well as a very interesting variety of implements of husbandry, was also exhibited, which will be noticed in the reports of the committees on the same.

Among other proceedings of the society, the following officers were appointed for the ensuing year, viz:

Gen. Thomas Emory, of Queen Ann's County, President; Cols. John Mercer, of Anne Arundel

County, and Anthony Kimmell, of Frederick County, Vice Presidents; and Col. B. U. Campbell, Secretary and Treasurer. The Society resolved, to hold their next annual Fair on the third Thursday in October, 1841, an earlier period being found to conflict with the business of farmers and planters. It was to be regretted that so few of their agricultural friends made their appearance from the Eastern Shore on this occasion, and also that an engagement of a political character debarred many from the western counties from attending. The trustees, however, have every reason to believe, that at their next annual Fair, which it is contemplated to continue for three days, there will be such an acquisition to the present number of the society, as will ensure its establishment upon a most respectable and permanent basis.

THE EXECUTIVE COMMITTEE.

To JOHN S. WILLIAMS, ESQ.

Trustee of the M. Ag. Soc., charged with the superintendence of implements of husbandry:

Sir—The undersigned committee, to whom was submitted the several articles of husbandry and farming implements for their inspection and recommendation, do most respectfully report, that they have examined those submitted, and have to report that time will not allow them to make as elaborate a report as they would desire, and were they to make at this time a discrimination among the many articles, it would be an invidious distinction. They, however, take pleasure in reporting that the following agricultural implements, which so greatly relieve manual labor, have met their cordial approbation; and they do recommend the following among the many submitted which they have inspected, as worthy of public patronage.

No. 1. The Corn Planter and Seed Mill; Post Auger, and model of a Mowing and Reaping Machine, exhibited by Mr. George Page.

No. 2. The Ploughs, Straw Cutter, Root Cutter, Corn Shellers, Horse Power, Corn Crusher, Fanning Mill, Raising Machine, Garden Hand Plough and Churn, exhibited by R. Sinclair, jr. and Co.

No. 3. The Ploughs, Fanning Mill, Straw Cutter, Thrashing Machine, Cultivators, exhibited by J. S. Eastman.

No. 4. The Ploughs, Cultivators, Fanning Mill, Root Cutter and Straw Cutter, exhibited by John T. Durding, and Co.

No. 5. The two Reaping Machines, exhibited by Mr. Hussey.

No. 6. The Plough exhibited by Mr. Tinkler.

No. 7. The Plough exhibited by Larkin L. Moore.

No. 8. The Washing Machine, exhibited by Mr. Scott.

The above is submitted by

JOHN P. E. STANLEY, } *Committee.*
ANTHONY KIMMELL, }

T. THOMAS, *Sec'y.*

MONTHLY COMMERCIAL REPORT.

For the Farmers' Register.

The fiscal year which terminates with this month will exhibit an export of domestic products exceeding in *quantity*, if not in *value*, that of any preceding one. The crop of cotton reaches nearly if not quite to 2,160,000 bales, of which 1,850,000 bales have been exported to foreign countries, and only 55,000 bales remain in our home markets.

The quantity of tobacco inspected in Virginia, Maryland, and New Orleans, is about 130,000 hhds. of which a moderate, but unascertained stock remains in the country.

Of flour and grain we will not attempt to estimate the product of the past year, and the export of the present one.

While the exports of the country have been thus unusually great, the import, on the contrary, is small, as the finances of the government will probably show. The prices of most of our commodities have been low, on both sides the Atlantic, and bid fair to continue so; but these low prices increase the consumption, and thus produce some beneficial effect.

Reports from the cotton-growing states might induce a belief that the devastation by caterpillars, &c. was such as to reduce the crop one third or one fourth; but as such statements are made every season, there is great want of faith in them, though they are sometimes realized.

As respects the wheat crop in this part of the country, the assertions of deficiency *are* realized. Already the millers in Petersburg find the supply inadequate to their moderate demands, while the prices they pay are higher than those quoted in Baltimore and Philadelphia.

The weather for a month past has been favorable to the maturing of the tobacco crop, which, although less than the last, will be a full average one. The present quotations are, for tobacco, $4 to $10, wheat, $1 to $1 15, flour, $5¼, cotton, 7½ to 9½, corn, 45 to 50 cents, bacon, 12½ cents.

There is every prospect of a resumption of specie payments by the banks, in January next. Exchange on New York, 3 to 3¼; on London, 9½ to 10.

X.

Sept. 29, 1840.

ARTIFICIAL GRASSES, &c.

From the Memoirs of the "Society of Virginia for Promoting Agriculture."

Gloucester county, 19th June, 1818.

Dear sir—I am highly gratified by the late meeting of the Agricultural Society at Richmond; their proceedings and the light thrown on the subject, give a lively hope that the land of our fathers may yet revive and flourish. Invited as we are, by the president and yourself, I am induced, however awkward on paper I may appear, to offer my feeble aid to promote so desirable, so great an object. I am, indeed, a very old planter, but certainly a young farmer—a few years only have passed, since my mind comprehended any thing like improvement on a scale sufficiently large to be useful. A publication a few years since, by Col. Taylor, entitled *Arator*, and some acquaintance with him, (who, I think, deserves well of his country,) induced me to adopt a system, the effects of which are now strikingly beneficial; nearly the whole of the farm on which I live, containing about 800 acres for cultivation, is sown with artificial grasses, except about 200 acres in Indian corn, which prepares it for small grain and grass; and I have the pleasure to find my neighbors beginning also to be highly impress-

ed with the utility of artificial grass, and some have sown largely and are experiencing its advantages. It is easy to talk of experiments, and indeed, to make them; but nothing more fallacious and mischievous, when made without judgment or without care, and denounced without a fair trial.

With respect to artificial grasses, I believe all the different kinds generally spoken of, are good. I have sown clover, timothy, herds-grass, orchard-grass, and meadow-oat, or, as it is frequently called, Peruvian-grass; but have thought that clover and timothy suited me best; different soils and situations may make some other kinds of more utility. Where circumstances will permit, the mode practised by myself to procure seed, certainly has succeeded well. I generally make from 50 to 60 tons of timothy and clover hay, mixed, and by thrashing a sufficient part, (always selecting that best mixed, I obtained seed enough to sow two hundred acres annually. I find, that notwithstanding the clover is rather dry before the timothy is fit to cut, it is very good when put up with timothy slightly cured; and always a large proportion of the seed of the latter is sufficiently matured to answer the purpose.

When I had the pleasure to be with you some years since, at the Warm Springs, you spoke much in favor of deep ploughing; I differed in opinion—and you know that we old planters are rather bigoted, and often obstinate. It however made an impression on my mind, and produced frequent experiments, until at length, from believing that very little land would bear it, there is hardly any that would not be improved by it.

It may be useful to draw the attention of our farmers to the properties of white wash, or common lime and water, when applied to the interior of granaries. I have applied it freely to mine for ten or twelve years, and it has freed them from the weevil, and other noxious insects with which they were infested, and does, I have no doubt, in some measure, preserve the wood. I am, sir, with esteem, respectfully yours, PHILIP TABB.

P. S. If you think the above contains any useful information, be pleased to communicate it in such manner as you may think proper.

Col. WILSON C. NICHOLAS, *Richmond.*

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